TeleTrader Professional

User Guide

TeleTrader Software GmbH

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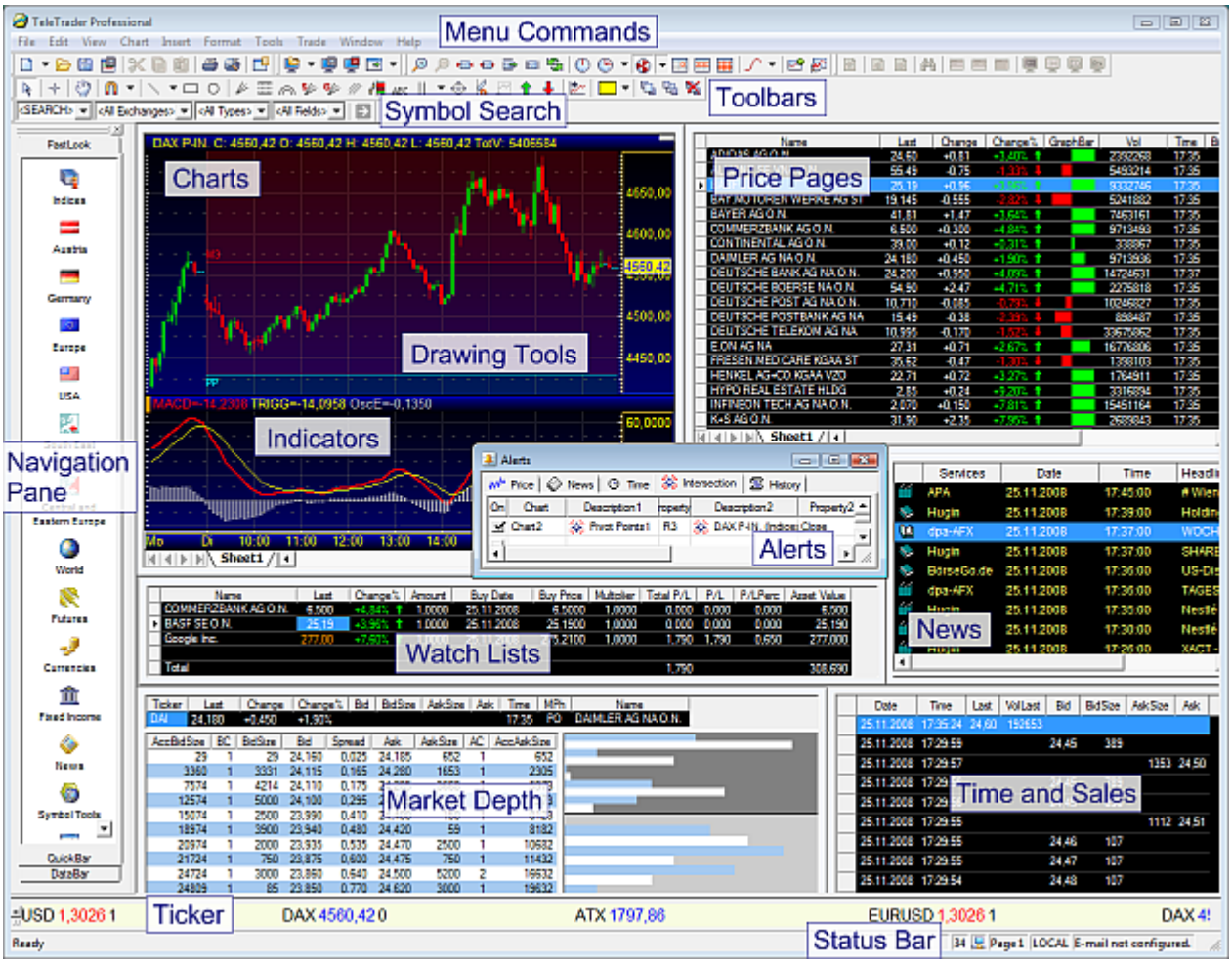
First Steps with TeleTrader Professional

If you have not used TeleTrader Professional before, this *Getting Started* guide will show you how to log in and start working with Professional. With the use of some practical examples we will take you on a guided tour of the program and show you how to display securities, use different document types for visualizing quote data, retrieve news stories for a specific security, analyze charts with drawing tools and analysis tools, organize documents into virtual pages and much more.

Before we start, take a look below at the overview of the most important parts of the TeleTrader Professional main window, and examples for the different document types.



TeleTrader Professional Version 11.0

Additional Online Resources

This User Guide covers the features and handling of TeleTrader Professional, as well as the syntax of the TeleTrader Language, which is a simple programming language that you can use to create your own indicators or signals

If you want to get a visual introduction to the basic functions of TeleTrader Professional, we also offer a range of short *Video Tutorials* (maximum 5 minutes each). You can either watch them online (you will need a Flash plug-in for seeing them) or download them to your computer in .avi format.

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You can find further information about TeleTrader Professional on the Web:

- On http://professional.teletrader.com/events you find the current schedule for our free online webinars, where we regularly present an introduction to TeleTrader Professional or focus on individual features of the program
- On http://professional.teletrader.com/?faq you find a collection of Frequently Asked Questions that is regularly updated and expanded
- On http://professional.teletrader.com/?release_notes you find the latest release notes which give you an overview of the new features of the latest versions

Logging in to TeleTrader Professional

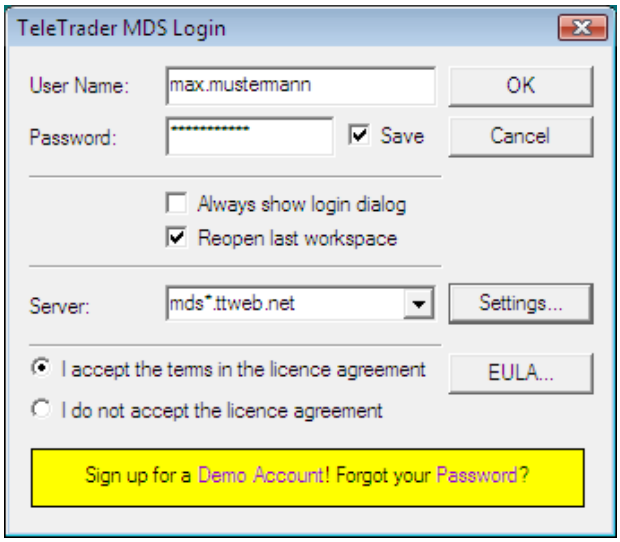
When you start TeleTrader Professional for the first time, you will be asked to log in. This is because TeleTrader Professional must connect to the Market Data Server to get the latest quotes from the exchanges. You should by now have received an e-mail with your login data (user name and password).

Note If you do not know your login data yet, you can click on the link **Sign up for a Demo Account!** in the **TeleTrader MDS Login** dialog to sign up for a free trial account of TeleTrader Professional. If you have signed up already, but have lost your password, click on the link **Forgot your Password?** and enter your user name in the form that appears. Your account data will be sent to the e-mail address that you provided during the registration process.

- Double-click the TeleTrader Professional icon that you find on your desktop. Alternatively, you can also click on the **Windows Start** button, and then select **All Programs > TeleTrader Professional**.

Note If you are using Windows 8, press the **Window** key or move the cursor to the lower left corner of the screen. The Start screen will open. Then, click on the TeleTrader Professional icon.

- To log in, you just have to enter the user name that you have received into the field **User Name**, and the password into the field **Password**. You can copy the password from the e-mail and paste it into the text box to make sure you don't mistype any character.



- Click **I accept the terms in the license agreement**. If you want to, you can read the End User License Agreement by clicking on the button **EULA**.

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- You can see that there are several other possible settings in the dialog. We recommend that you keep the default settings:
  - The **Save** check box should be selected. The next time you log in, you don't have to enter your user name and password again.
  - The **Reopen last workspace** check box should also be selected. When you start Professional, the workspace that you worked with last will be opened automatically. (You will learn about workspaces later.)
  - The **Always show login dialog** check box should be cleared. The login dialog will not be displayed again on future logins, and Professional will automatically log you in using your last login information. You can however still bring up the login dialog during startup if you press the SHIFT key while starting Professional.
  - The field **Server** should be set to **mds*.ttweb.net**. This is the address of the TeleTrader Market Data Server.
- Click **OK** to start Professional. You should now see the main window of the program with the **Quick Introduction** page.

> **Note** **Professional** only displays the Quick Introduction on the first start of the program. If you want to read it again later, go to the **Help** menu and select **Quick Introduction**.

Help! Something went wrong

If you don't see the main Professional window by now, your computer probably has a problem with connecting to the TeleTrader Market Data Server. Do not despair – there are several things that you can do. Read about them in the section on troubleshooting connection problems on page 445.

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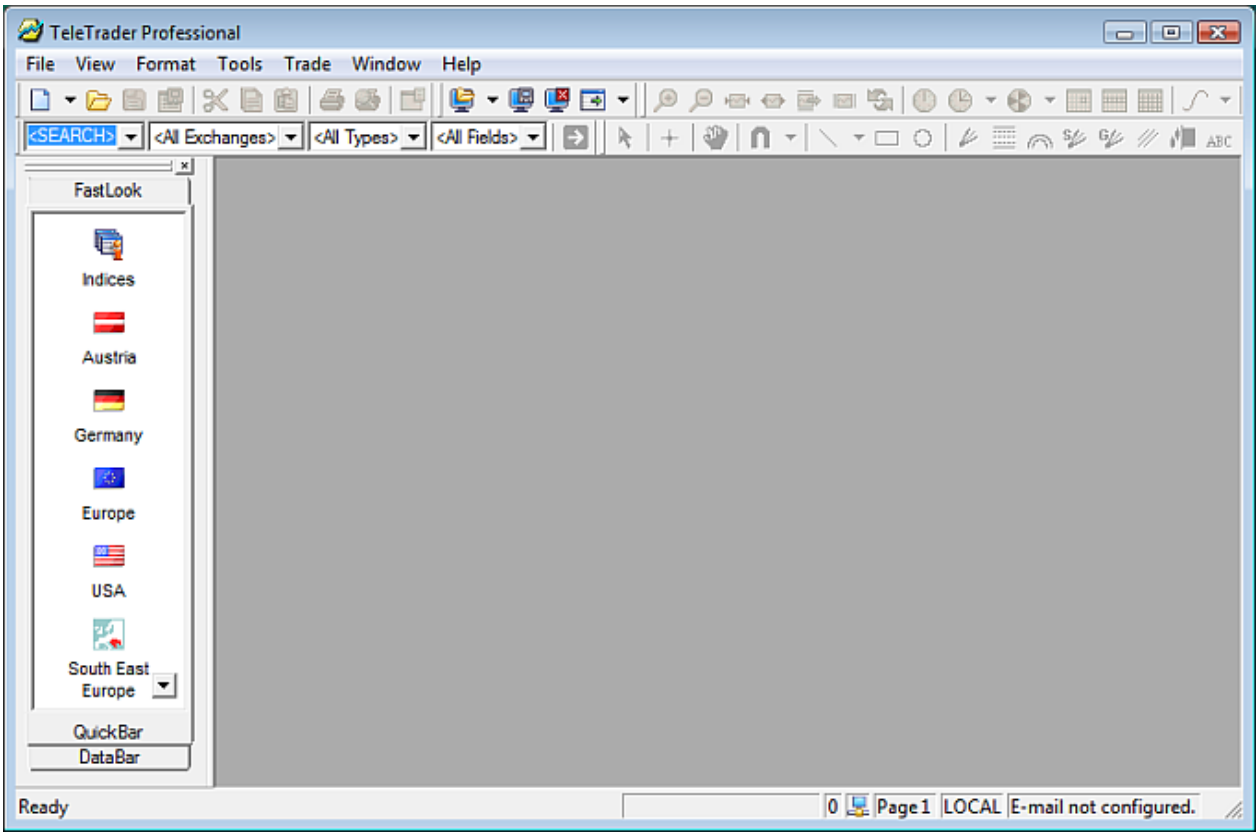
QuickBar and Documents

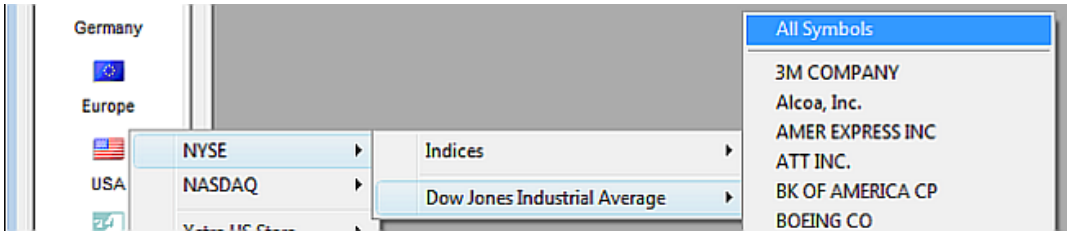
Now that you have successfully started TeleTrader Professional for the first time, we will take you on a little guided tour of the program. We will start with the empty screen that you see when first starting Professional, and start to fill it with different documents, organize these in so-called virtual pages, and save them in a workspace. At the end of this tour you should be able to use the most important features and tools of Professional.



If you need further information at some stage, you will find many links to in-depth explanations for every topic.

The QuickBar holds popular security lists

- When you look at the main window of TeleTrader Professional, you can see a bar or pane on the left side of the window. This is called the *Navigation pane*. It consists of three tabs: QuickBar, DataBar and FastLook. If you don't see the Navigation pane, go to the **View** menu and click **Navigation Pane**.
- For now, we are only interested in the **QuickBar**. This is the tab which shows a list of icons. Most icons contain a group of popular securities. (Some icons contain different things, such as the icon **Virtual Pages**.) The QuickBar is a good starting point for building your own workspace, because it offers fast access to important securities. Furthermore, the lists here are maintained on the server, so they are always up-to-date. If you can't see the QuickBar already, click on the tab **QuickBar** at the bottom of the Navigation pane.
- We want to open a list of all stocks that are part of the Dow Jones Industrial Average index, which is an American index. Click on the icon **USA** in the QuickBar.



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- You now see a list of different exchanges and market segments. Click on the group **NYSE**, and then on **Dow Jones Industrial Average**. You should now see a list of all stocks that are part of this index, and an entry **All Symbols**. Click on this entry.
- A price page opens which lists all securities that are part of the Dow Jones Industrial Average (DJIA). You will learn more about price pages in the next section, Price Pages and News on page 14.

Note You might wonder why the entry to open all securities is called "All *Symbols*". This is because in TeleTrader Professional, all stocks, futures, options, indices and other securities are called symbols. This term is widely used throughout the program, and we too will speak of a *symbol* from now on every time we refer to any type of security in TeleTrader Professional.

You can also open charts from the QuickBar

- In addition to the list of stocks that are part of the DJIA, we also want to open a chart that shows the development of this index. You can also do this from the QuickBar – click on the icon **USA** again, click on the group **NYSE**, but now choose **Indices**.
- You now see a list of all indices on the New York Stock Exchange. Click on the entry **Dow Jones Industrial Average Index**.
- A chart opens that shows the DJIA. You will learn more about charts in the section Charts and Technical Analysis on page 21.

Note You can also open other kinds of documents from the QuickBar. See Opening Symbols from the QuickBar on page 31.

Most windows that show quote data are called "Documents"

You now have opened two windows on the screen: The price page with the stocks that are part of the DJIA index, and the chart that shows the DJIA symbol. These windows are also called *documents* in Professional. Most documents are used to display quote data, like the *Price Page* and *Chart* that you have opened so far. You can also use the following documents to display quote data: *Market Depth* displays a summary of all orders that are currently in the market, *Time and Sales* is a chronological list of all orders and trades, the *Options Matrix* shows an overview of all Call and Put options for an underlying, and a *Watch List* is a special price page with basic portfolio functionality.

There are also two additional kinds of documents that do not hold quote data: The *News* document (you will learn more about this in the next section, Price Pages and News on page 14) and the *Web Watch* document, which is like a web browser window that is integrated in Professional.

Documents are in essence like windows that are displayed inside Professional. What distinguishes them from other windows, like dialogs, pop-up windows and panes, is that you can create as many documents as you like and even save them.

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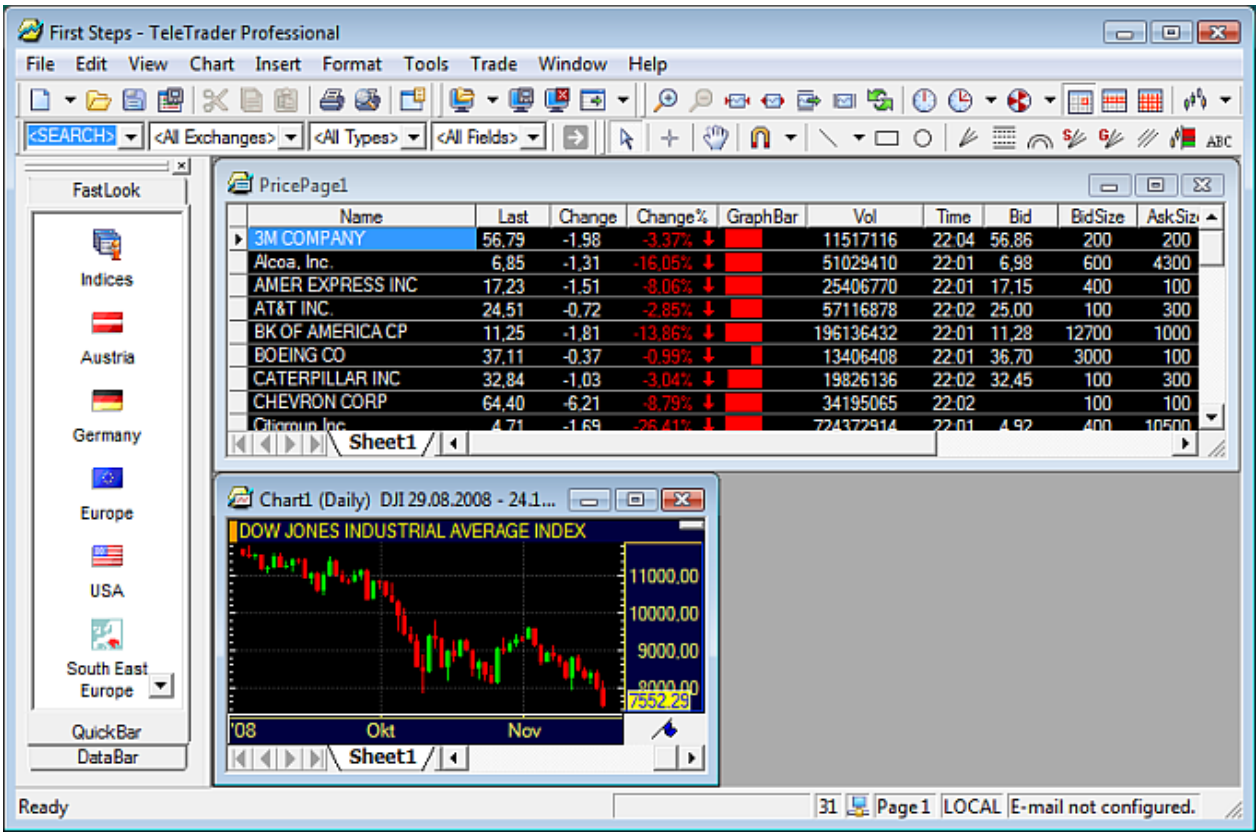
Price Pages and News

This is how your screen may look like now (you can move the document windows around on the screen and also resize them like any other window):


First Steps - TeleTrader Professional
File Edit View Chart Insert Format Tools Trade Window Help
FastLook
Indices
Austria
Germany
Europe
USA
South East Europe
QuickBar
DataBar
PricePage1
Name Last Change Change% GraphBar Vol Time Bid BidSize AskSize
3M COMPANY 56,79 -1,98 -3,37% 11517116 22:04 56,86 200 200
Alcoa, Inc. 6,85 -1,31 -16,05% 51029410 22:01 6,98 600 4300
AMER EXPRESS INC 17,23 -1,51 -8,06% 25406770 22:01 17,15 400 100
AT&T INC. 24,51 -0,72 -2,85% 57116878 22:02 25,00 100 300
BK OF AMERICA CP 11,25 -1,81 -13,86% 196136432 22:01 11,28 12700 1000
BOEING CO 37,11 -0,37 -0,99% 13406408 22:01 36,70 3000 100
CATERPILLAR INC 32,84 -1,03 -3,04% 19826136 22:02 32,45 100 300
CHEVRON CORP 64,40 -6,21 -8,79% 34195065 22:02 100 100
Sheet1
Chart1 (Daily) DJI 29.08.2008 - 24.1...
DOW JONES INDUSTRIAL AVERAGE INDEX
11000,00
10000,00
9000,00
7552,29
'08 Okt Nov
Sheet1
Ready
31 Page 1 LOCAL E-mail not configured.

We will now work a bit more with the price page and also create some more documents.

A price page is like a customizable table

- As you can see, a price page shows many symbols in a table. Each row of a price page holds one symbol (as was explained already, *symbol* is the term used in TeleTrader Professional for every kind of security).

> **Note** A price page looks like a spreadsheet – in fact, you can also export data from a Professional price page to spreadsheet software like Microsoft Excel or Open Office by using DDE or RTD links. See Importing and Exporting Security Data on page 363.

- You can customize many parts of a price page – choose a new background color, use a different font etc. To show you an example, right-click anywhere in the price page. A menu is opened (the so-called *context menu* – more about context menus below). Click on the last option in the menu – **Properties**.

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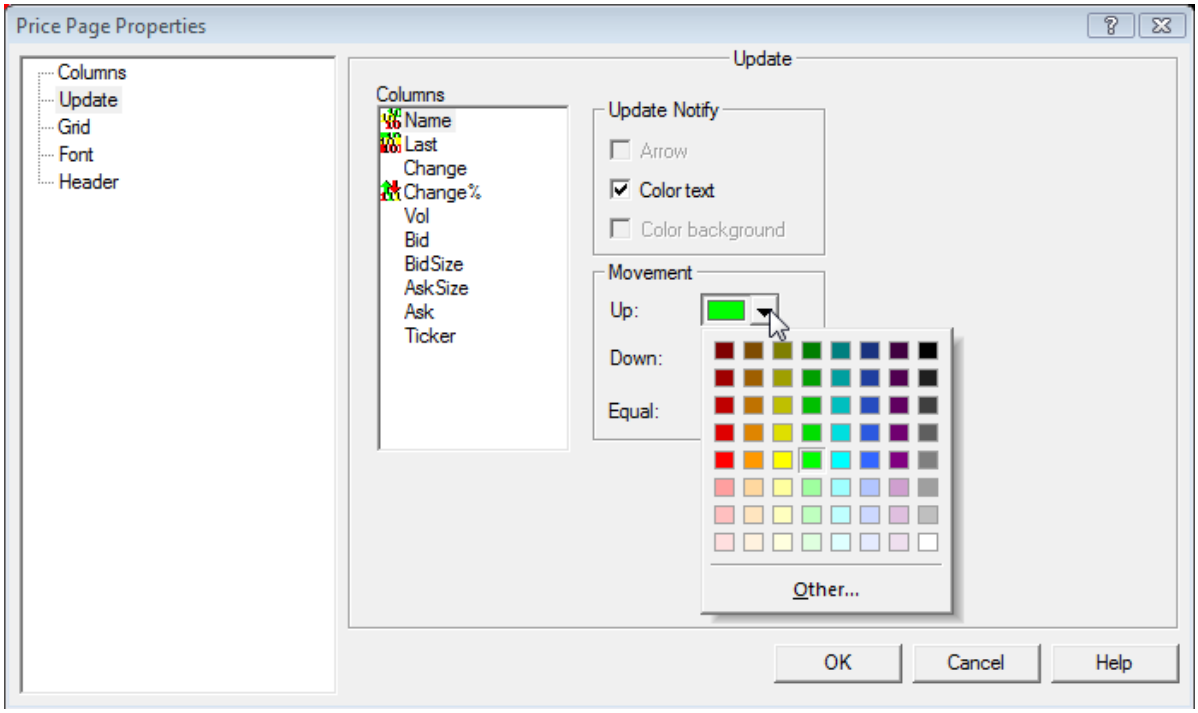
- A dialog opens. On the left side of the dialog you can see that some groups of properties have been defined (the so-called property sheets) – click on **Update** there. These are the settings that control the *update styles* that are used in the price page – the visual effects that are displayed when prices rise or fall.



- You want to highlight the name of a DJIA stock in red if prices fall, and in green when prices rise. To do this, click on **Name** in the list **Columns**. Then, select the checkbox **Color text**. The text of the column **Name** will now be colored according to the price changes.
- You now have to choose the colors that should be used. Usually, the colors green (for upwards movements) and red (for downwards movements) should already be selected – but you can also choose other colors, if you like. Just click on the arrow next to the color that you want to change.
- Click **OK** to apply your changed settings to the price page. You should see the changes immediately.

Note You can save all your preferred settings in a so-called *template*. See Saving your Preferences in Templates on page 145.

You can open all kinds of documents from a price page

- The price page does not only display the quote data for the symbol: You can also work with a symbol displayed there and, for example, open it in a chart document. Double-click on the 3M COMPANY symbol (that is, the row that holds the 3M COMPANY security) – a new chart document will open.

Note A double-click on a symbol will almost always open a chart (except when you double-click in a chart, of course). You can change this in the Professional Program Options, though. See Double-Click Actions Settings on page 346.

- You can open other types of documents too: Right-click on the 3M COMPANY symbol and choose **Open**. A sub-menu shows all available options for this symbol. Click on **Time and Sales**.

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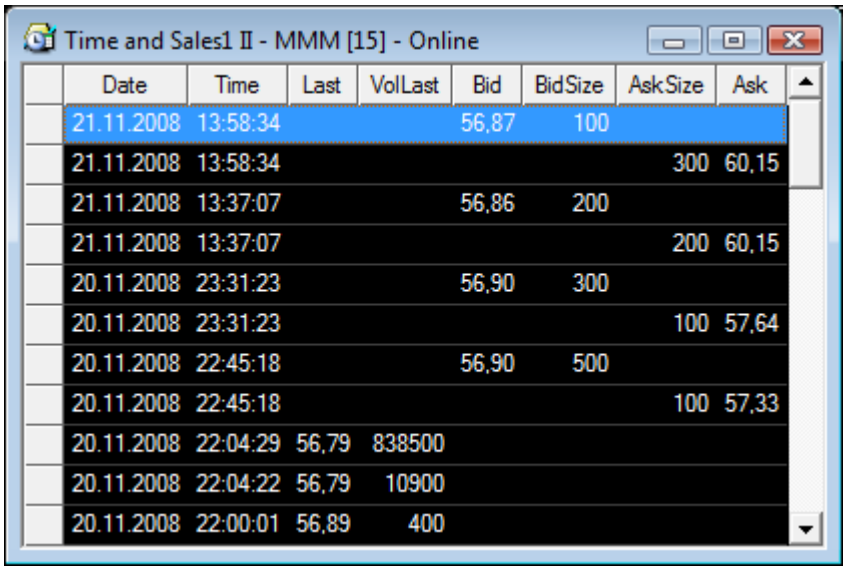
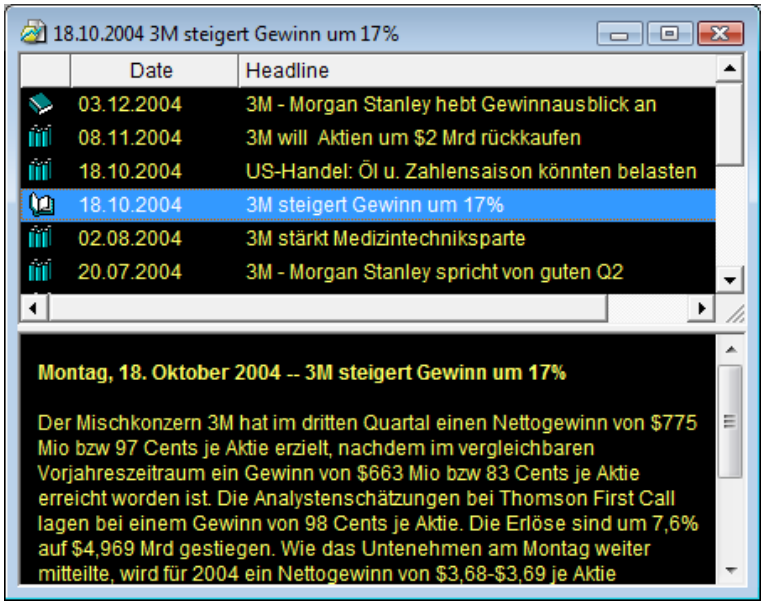
- A time and sales document opens, where you can see a chronological list of all orders and trades. We will not discuss this document in depth here - you can read more about it in the section Time and Sales on page 56.



You can show related news for a symbol

- Leave the time and sales window open and return to the price page (just click on it and it will jump to the foreground).
- Let's say that you have looked at the chart for 3M COMPANY and seen a very sudden price movement at a specific date. You have the feeling that this is due to some news that have arrived on this day. You want to see the news for 3M – but you do not want to manually sift through all news messages from that day to see if something relevant comes up. Fortunately, Professional can do this for you: Just right-click on the symbol 3M COMPANY in your price page and choose **Open > Search News**.
- A news document opens which only contains news messages concerning 3M. They are ordered chronologically, so you can easily find out what happened on that specific day.


18.10.2004 3M steigert Gewinn um 17%
Date Headline
03.12.2004 3M - Morgan Stanley hebt Gewinnausblick an
08.11.2004 3M will Aktien um $2 Mrd rückkaufen
18.10.2004 US-Handel: Öl u. Zahlensaison könnten belasten
18.10.2004 3M steigert Gewinn um 17%
02.08.2004 3M stärkt Medizintechniksparte
20.07.2004 3M - Morgan Stanley spricht von guten Q2
Montag, 18. Oktober 2004 -- 3M steigert Gewinn um 17%
Der Mischkonzern 3M hat im dritten Quartal einen Nettogewinn von $775 Mio bzw 97 Cents je Aktie erzielt, nachdem im vergleichbaren Vorjahreszeitraum ein Gewinn von $663 Mio bzw 83 Cents je Aktie erreicht worden ist. Die Analystenschätzungen bei Thomson First Call lagen bei einem Gewinn von 98 Cents je Aktie. Die Erlöse sind um 7,6% auf $4,969 Mrd gestiegen. Wie das Untenehmen am Montag weiter mitteilte, wird für 2004 ein Nettogewinn von $3,68-$3,69 je Aktie

Note The news messages are identified by the ISIN of the symbol, so this feature only works when both the symbol and the news feed you are working with contain ISINs.

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The context menu shows the most suitable commands

As you have seen, the most frequently needed commands are often available from the context menu in TeleTrader Professional. To display it, just click with the right button of your mouse on a document (or any other part of the Professional window). You will see a menu that shows the commands that are most suitable for the current situation.

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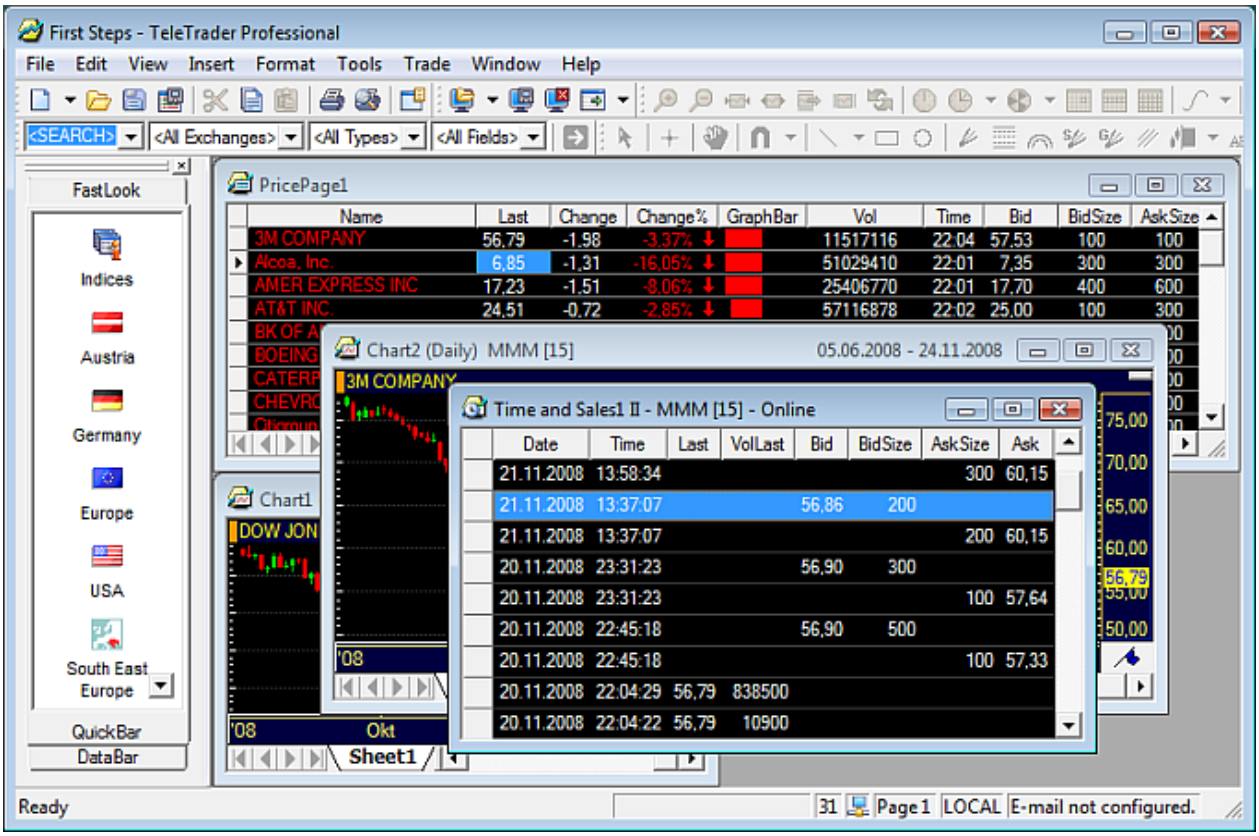
Virtual Pages and Symbol Search

You have now opened four document windows. Your screen will look similar to this one:



A bit crowded, right? Fortunately, you can keep all your documents open and still organize them in a way that you can work with them comfortably: Just divide them into several *Virtual Pages*.

Virtual pages are containers for documents

- We will divide the documents we have opened so far into two parts (or, more correctly, virtual pages): The first page will be called *Stocks* and contain the price page, the chart of 3M and time and sales for 3M. The second page will be called *Indices* and contain the chart of the Dow Jones Industrial Average. We will add a second chart there later.
- First, a little information about virtual pages: You can think of them like of the pages in a book. What you see now on the screen is the first page of your "book" – the first virtual page. You have 19 other pages available that you can use to organize your windows – all of them are empty at the moment.

Note If you want to see some good examples for virtual pages, TeleTrader Professional delivers some already prepared virtual pages that you can easily add to your workspace. Just click **File > Open Virtual Page** to see an overview of available pages. See Opening and Saving Virtual Pages on page 157.

- We are now going to fill the second virtual page: Click on the chart of the DJIA so that it is displayed in the foreground. Now, click on the **Window** menu and click **Move Window to Virtual Page**. In the submenu, choose **Page 2**.

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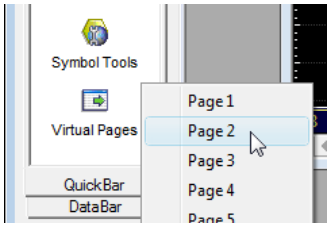
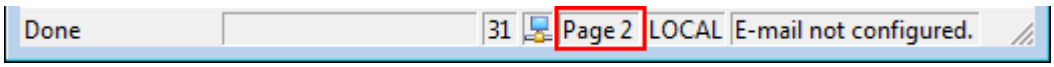
- The chart window is now removed from the screen – that is, from the first virtual page. It is now only visible on the second virtual page. You can easily switch to this page by clicking on the icon **Virtual Pages** in the QuickBar and choosing **Page 2**.

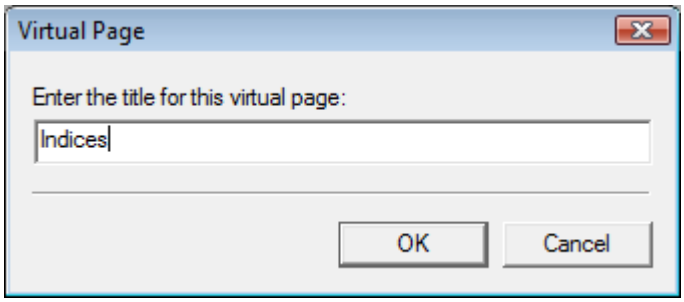


Each virtual page can have a name

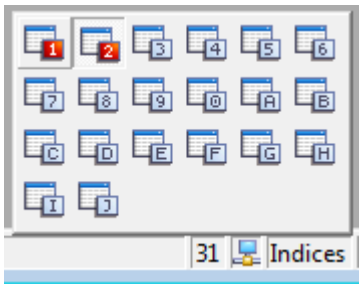
- Now, we want to assign different names to the pages instead of just calling them Page 1 and Page 2. You should be on **Page 2** at the moment (you can see this in the status bar).



- On the **Window** menu, click **Page Title**. A dialog appears where you can enter the new name *Indices* for this virtual page. Click **OK** when you are done.



- Switch to the first virtual page now. You can use the QuickBar, or you can click on the name of the active virtual page in the status bar and then choose the first page from the pop-up.



- Repeat the procedure (**Window > Page Title**) and name this page *Stocks*.

With Symbol Search you can find all available symbols

- Switch back to the second virtual page – now called *Indices*.

> **Note** If you like to work with the keyboard, you can try a different method of switching between virtual pages – just press the F12 key on your keyboard. This will always take you to the next page, or the first page if you are currently on the last page. In our current setup (two pages), this means that F12 will always switch to the other of two pages.

- As there is plenty of space on this virtual page, we want to display a second chart with a different index here – the NASDAQ 100. You could also find this index on the QuickBar, of course – however, for demonstration purposes, we will use Symbol Search to find it.

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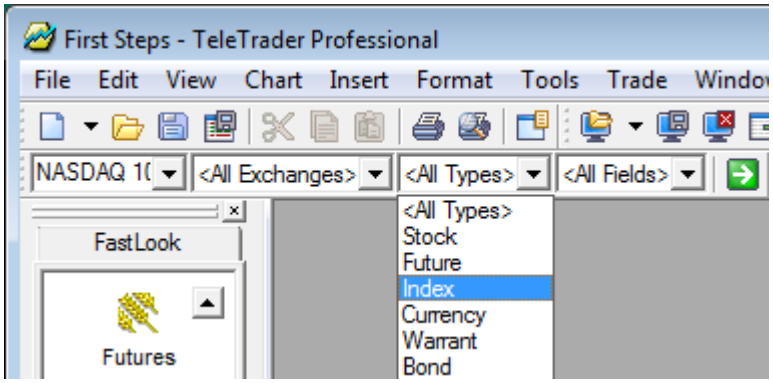
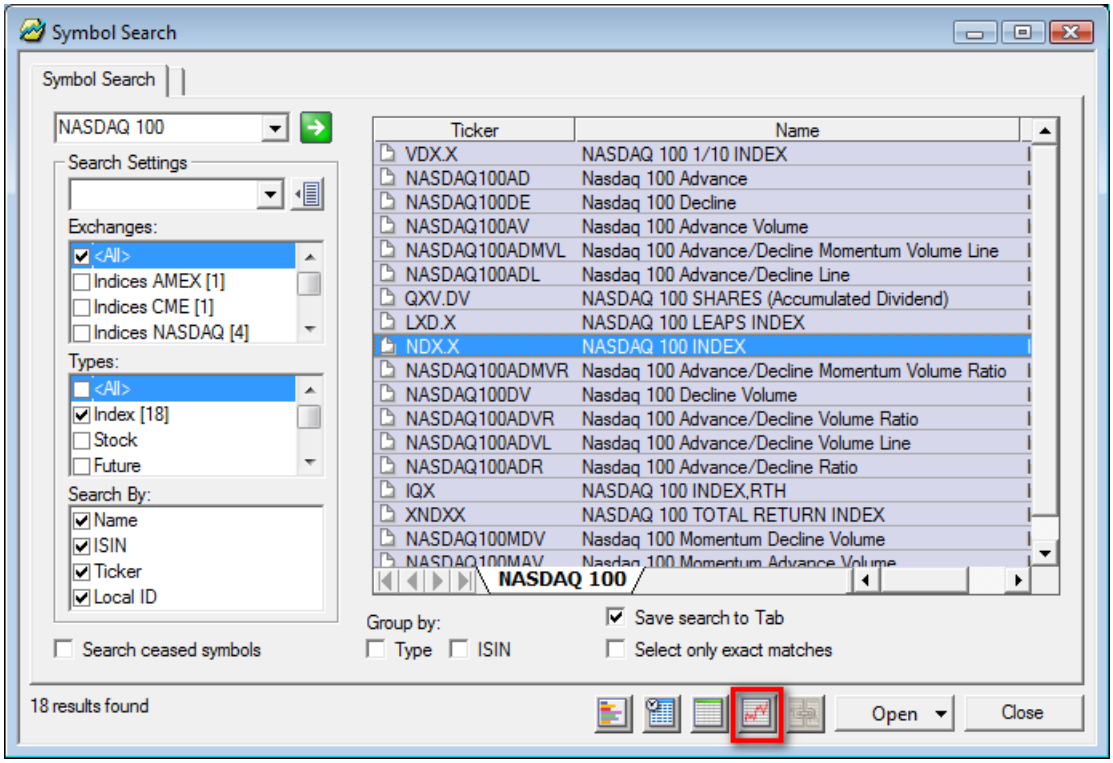
- With Symbol Search you can find all symbols that are available for you (that is, included in your data package). There are several ways of using symbol search – we will use the Symbol Search toolbar, which is located in the top part of the main window along with all the other toolbars.
- The Symbol Search toolbar consists of four fields, with which you can narrow down your search. We will now only use two of them to find the NASDAQ 100. The first of those is the leftmost field – here, you enter your search term.
- Next, open the third field, that is at the moment labeled **<All Types>**. Choose **Index** there, as we want to find a stock index.



- Click the green button on the right or press the ENTER key to start the search.
- The Symbol Search dialog is displayed with your search results. You probably received more than one result – select the one that you want to by clicking on it (hint: its ticker is NDX.X).
- Now, click on the chart document button to open this symbol in a chart. You can also try the other buttons to see which documents you get (or you can refer to the section Opening Symbols from the Search Results on page 38).



- The NASDAQ 100 index is opened in a chart. You can now move it around on the screen so that you can see both charts on your virtual page. (Or, try the menu command **Window > Tile Horizontally**).

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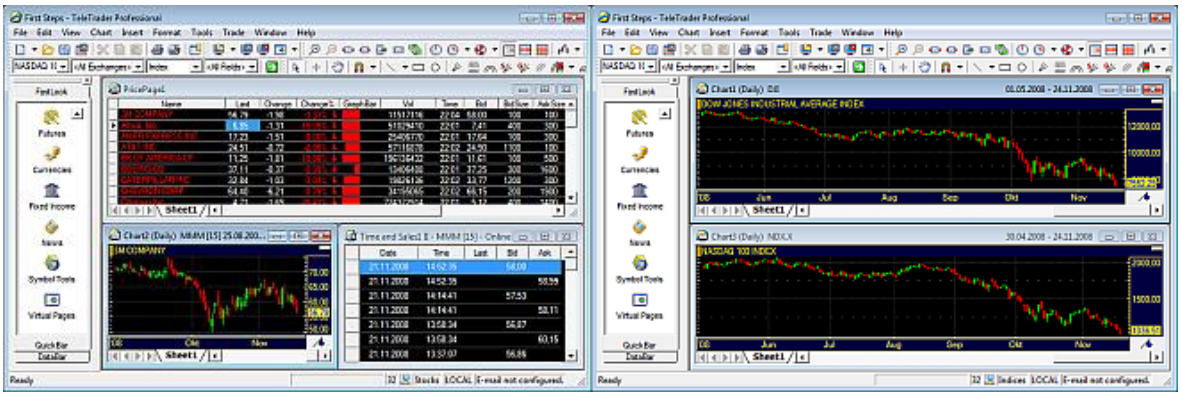
Charts and Technical Analysis

You have now divided your screen into two virtual pages. On each page, you display at least one chart document:



We will now work with these charts and for example add a trend line and a study, set an alert and link a chart to the price page.

Charts can have different data compressions

- You should now see the virtual page *Indices* on the screen (if you don't, press F12 to switch to it). This page contains two charts. We now want to change the compression of one of these charts from **Daily** to **Weekly**.
- Click on the chart that you want to change (it doesn't matter which of them you choose). Then have a look at the **Chart** toolbar: You can see that one icon is selected. This is the icon for daily compression – this means that each bar (or candle) that you see on the chart represents the data for one day.

- Now click on the icon to the right of the selected icon – the compression is changed to **Weekly**. This means that each bar on the chart represents a week's data.

Note You can also display charts with a monthly compression and even intraday or tick compressions.

With drawing tools you can draw trend lines and many other objects

- To work with the chart, and better interpret the data you are seeing there, you can use a range of *drawing tools* in Professional. These are graphical studies that are applied to the chart, or rather, to the time series displayed in the chart.

Note A *time series* is the visualization of a symbol with its current and historic data – it means that for each point in time you have a set of values (the *Open*, *High*, *Low* and *Close* prices of the security) that are normally displayed as bars or candles. As you have already learned, you can change the compression of these bars, so that each bar represents a day, a week, a month or some other period of time (e.g. 5 minutes).

- We will now draw a *trend line* on one of our charts. The trend line is one of the most basic drawing tools. As you probably know, it needs two reference points, which are usually placed at two pivots (highs or lows) of the time series.
- You can find all drawing tools on the **Drawing** toolbar. To activate the **Free Line** tool, click on its icon.

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- Now you will draw the trend line on the chart. It has two reference points – to set the first reference point (starting point), click on this point in the chart and hold the mouse button down.
- Move the mouse pointer to the second reference point (end point) and release the mouse button when you have reached the second point.

- The trend line is now inserted into the chart. You can move it around by dragging it with the mouse, you can extend or shorten it with its so-called *extension points* (see Extending and Shortening Lines with Extension Points on page 271) and duplicate it with its *visibility point* (see Lines and Trend Channels on page 246).

Indicators and signals help you interpret the price development

- There is also a second way to interpret the data on your charts, and even generate buy and sell signals: You can add a study to your chart. These are mathematical techniques that use calculations and statistics to help you identify and analyze market opportunities and risks. An *indicator* visualizes the data in a different way to help you interpret it more easily, whereas a *signal* also gives you hints to establish long or short positions or identifies typical constellations that have been significant in the past.

Note Please always bear in mind that no matter which indicator or signal you use, in the end you always have to take the responsibility for your trading decisions yourself.

- We will add an indicator to one of our charts: The *Simple Moving Average*, which calculates the sum of a number of values over a period of time and divides them by their number. The result is drawn on the chart as a line that is used to identify or confirm a trend.

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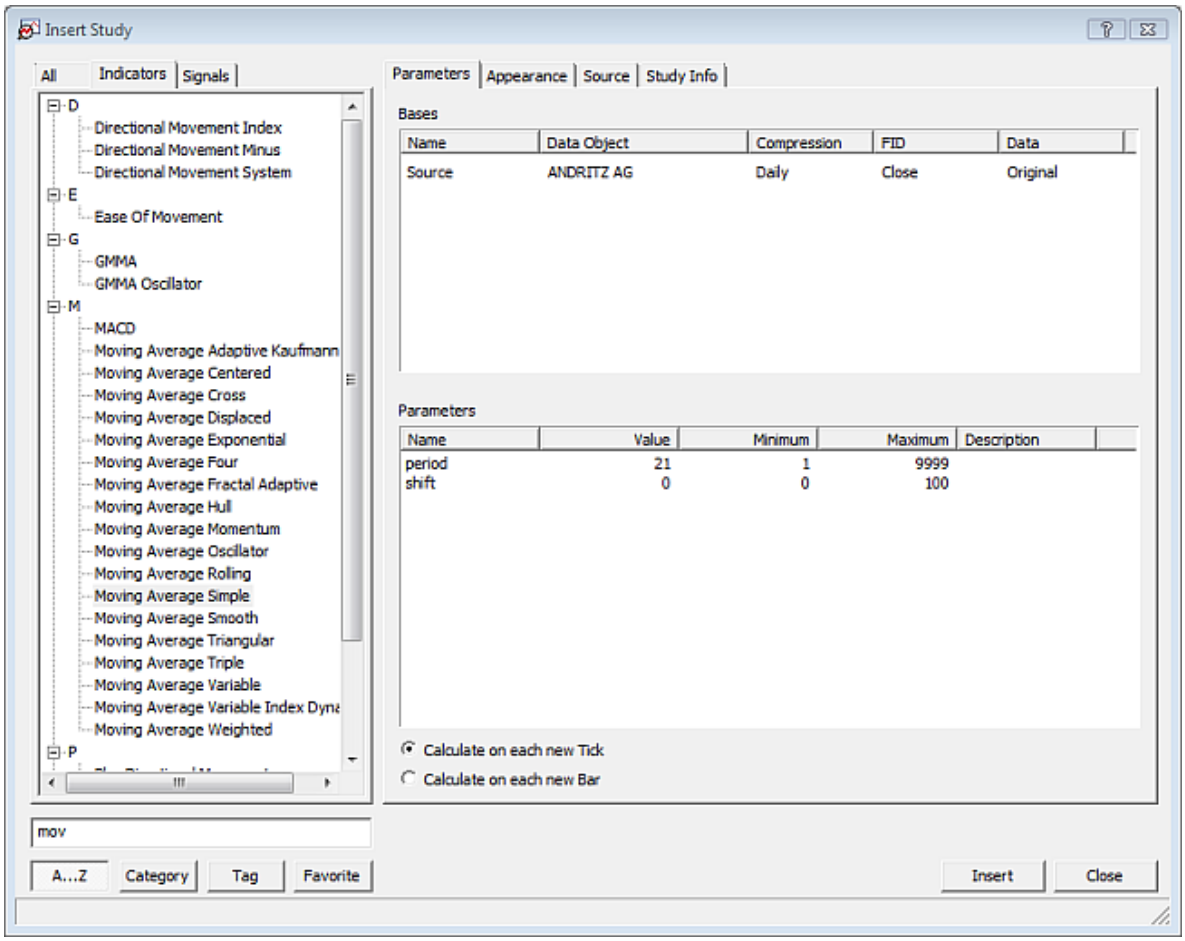
- To insert an indicator (or a signal), you use the **Insert Study** dialog: Right-click on the chart and choose **Insert Study**.



- The dialog shows all available studies on the left side, and their parameters and other attributes on the right side. Look for **Moving Average Simple** in the list on the left side. You will find it under the letter M, or in the category *Trend*. Click on it to choose it as the study that you want to insert.
- You can now adapt the parameters of this study. As you know, the Moving Average is always based on a certain period of time. When the period is longer, it lags behind the actual price movements more, but its interpretation is also more significant. Change the parameter *period* to a value of your choice: Click in the **Value** column and enter the new value there.

Note You can also change the appearance of the study on the **Appearance** tab, or look at how it is calculated on the **Source** tab. See Defining the Appearance of a Study on page 305.

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- Now you can click **Insert** to insert the Moving Average into your chart. It is drawn as a line in the same chart pane as your symbol. (Other indicators or signals can be inserted in a separate pane by default.)

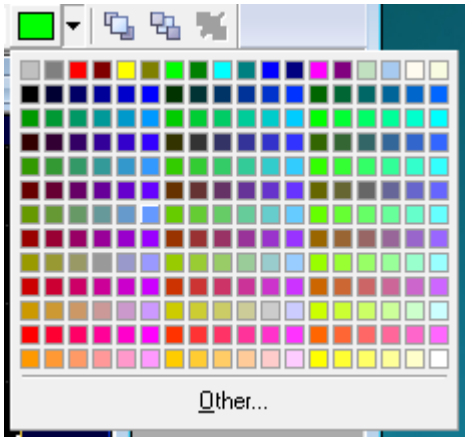
- Click **Close** to return to your chart.

Note If you want to add **Volume** and **Open Interest** to your chart: These are also defined as studies and can be inserted in the same way as any other study from the **Insert Study** dialog.

Every indicator or signal can be customized

- Like in a price page (and essentially, in all documents), you can do many customizations in a chart. You can for example change the color of the Moving Average that you just have inserted. To do this, click on the study line so that it is selected.

- For changing the color and style of a line in a chart, which is a task done rather often, two icons are available on the **Drawing** toolbar. To change the color of the line, click on the **Color** icon and choose a new color from the color selector.



- If you want to change the line style, click on the **Next Line Style** icon. With each click, another line style is applied. Just click until you reach the style you like.

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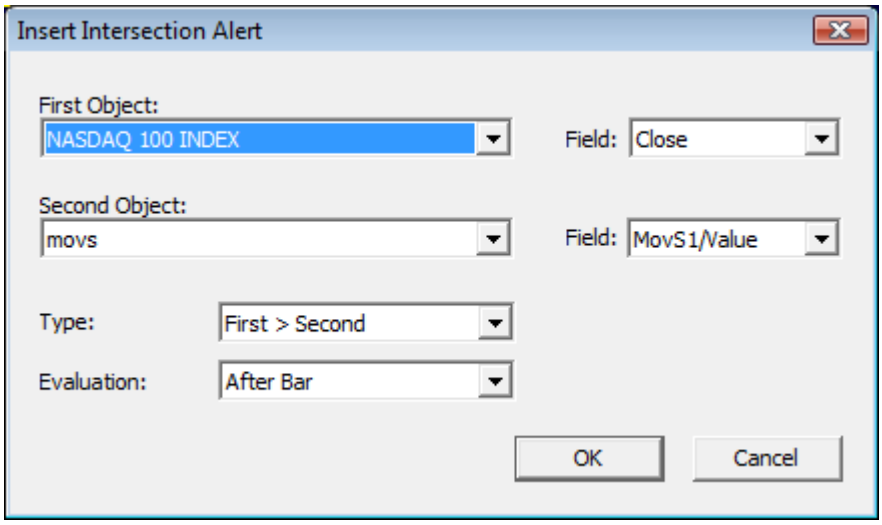
Note Of course you can also change all of these (and many more) properties in the **Chart Properties** dialog. There are a lot of options available, so customizing a chart is explained in more depth elsewhere: See Customizing the Charts on page 216.

Set alerts to get notifications about certain events

- When you are monitoring an indicator like the Moving Average, you are often interested in its intersections with the time series. That means, you want to know for example when the price rises above the Moving Average line or falls below the Moving Average line. You could of course look at the chart every few minutes to see if something has changed, but there is a much easier way: Just let Professional notify you when something interesting happens. For this, you use *alerts*.
- There are five types of alerts: *Time* alerts (these work sort of like an alarm clock), *Price* alerts (notify you when the price reaches a certain level), *News* alerts (when news messages arrive that contain a certain keyword), *Study* alerts (when a signal marker appears on the chart) and *Intersection* alerts. We will use an intersection alert to tell when the price of our symbol crosses the Moving Average line.
- Right-click in the chart where you inserted the Moving Average indicator and choose **Insert > Intersection Alert**. A dialog is shown – you now have to choose under which conditions you want to be notified. First, you have to choose what two objects are interesting to you. In our example, the first object is the symbol of the chart (for example the NASDAQ 100), and the second interesting object is the Moving Average line, which is called **movs** in the dialog.



Note If you see another object that is called **Line1**, this might be your trend line. You can see that intersection alerts can also be used with drawing tools!

- Next to the **Object** fields, you can see two lists called **Field**. Here, you define what value of each object is interesting to you. For the Moving Average, you only have one value to choose from. But your symbol offers more possibilities: You could monitor the *Open*, *High*, *Low* or *Close* price, or even the *Volume* or *Open Interest* of the security. Normally, you will choose the *Close* price here, which is also the default setting.
- You have even more settings to define in which case you want to be notified: In the **Type** list you can choose if you want to be notified on any intersection, or just when the price crosses the Moving Average line from above (**First < Second**) or from below (**First > Second**). In the **Evaluation** list, you can choose if Professional should check the conditions for the alert after each tick, or only after the bar is complete.

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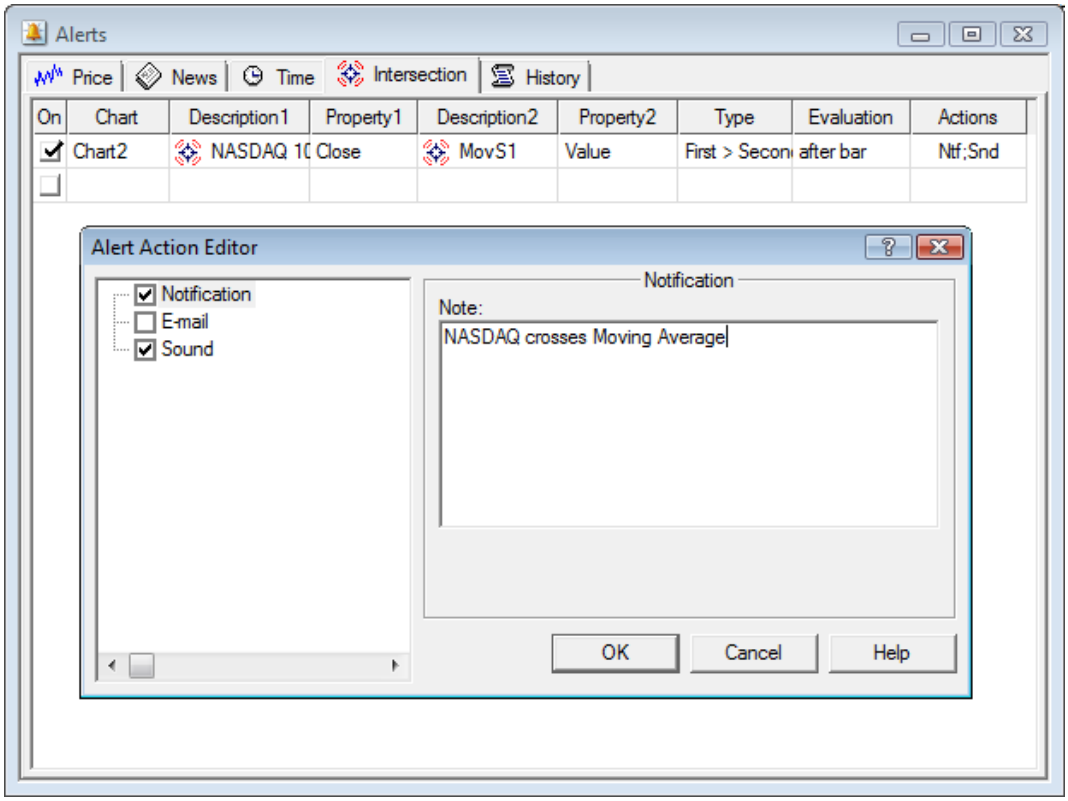
- When you have set all conditions for your alert, click **OK**. You will now see the **Alerts** window that shows an overview of all alerts that are active at the moment. Double-click in the **Actions** column: The **Alert Action Editor** appears. Here, you can choose which kind of notification you want to receive when the alert is triggered (that is, when the symbol's time series and the Moving Average line actually intersect): It can be a *Notification* that is shown on the screen as a pop-up, a *Sound* or even an *E-Mail* that is sent to you.



Note If you want to use the E-Mail notification, you have to configure Professional for using your e-mail account first. See E-Mail Settings on page 348.

Saving Your Data in Workspaces

You have created two virtual pages with many documents on them and learned about the most important concepts and functions of TeleTrader Professional. Before we end the guided tour, you now should save your work so that you can return to it later. To do this, we will introduce one last (but very important) concept: The *workspace*.

Workspaces are containers for virtual pages and their documents

- As you have already learnt, TeleTrader Professional offers *documents* like a chart or a price page to display quote data (or news). You can arrange several of these documents onto a *virtual page* to get a better overview of your work. And, as you will learn now, you can arrange several virtual pages into a *workspace* so that you can easily save them all at once. Your work will not get lost, and of course you can also open these virtual pages all at once, so that you can reuse them later on.

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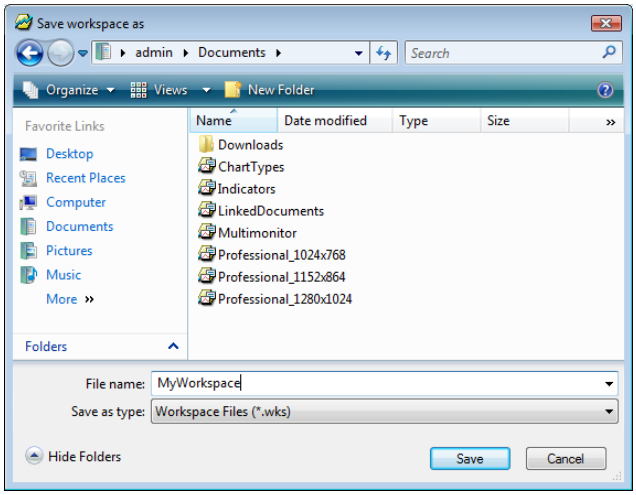
- Every time that you start TeleTrader Professional, it automatically opens a workspace for you. If you have selected the option **Reopen last workspace** in the login dialog, it will open the last workspace that you have worked with. If you did not select this option, Professional creates a new, empty workspace when you start the program. You can of course then open one of your saved workspaces.

> **Note** If you work with multiple monitors, a Professional workspace also remembers on which monitor it was displayed last and will automatically switch to this monitor. See Multi-Monitor Systems on page 171.

- So, when you opened Professional for the very first time, you actually also created your first workspace. All the documents you opened, and the virtual pages you created, are automatically part of this workspace. You see that creating a new workspace is very easy. However if you don't save your workspace before you close Professional (or open another workspace), your work will be lost.

Save your workspace before you close Professional

- Therefore, you will now save your first workspace: To do this, choose **File > Save Workspace**. The dialog **Save workspace as** appears.
- Choose the location where you want to save your workspace. Professional will suggest to save it into your **Documents** folder. This is usually a good idea, as all the other default workspaces are already there, and some shortcuts in the program require the workspaces to be all in one place.



> **Note** If you absolutely want to store your workspace in a different place, you are of course free to do so. You should however consider to change the path for **Documents** under **Tools > Options > File Locations** to your new location.

- Enter a name for your workspace in the **File name** box.
- Click **Save**. Your workspace is now saved on your computer – when you start Professional the next time, it should either be automatically opened, or you can open it manually with **File > Open Workspace** (depending on your settings in the login dialog).
- Now that your work is safe, you can close Professional (you can of course also leave it open and try out some of the other tools, if you want too!). On the **File** menu, click **Exit**.

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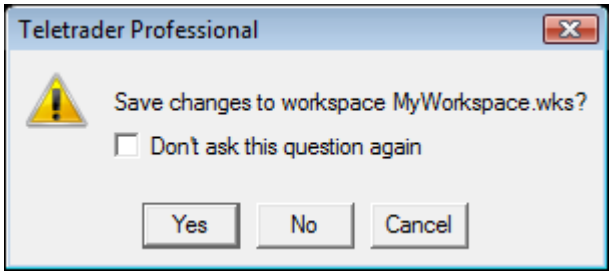
- Maybe Professional will ask you again if you want to save your workspace. This might happen if you have made any additional changes to your documents or virtual pages after you saved the workspace for the last time. If you click **Yes**, these changes will be saved too. If you click **No**, they won't be.



Note You can also save the answer to this question. For example, if you always want to save all changes, select the check box **Don't ask this question again** and click **Yes**. From now on, Professional won't ask again and simply save all changes to a workspace when you close it. You can of course later change this setting (under **Tools > Options > Default Responses**).

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Finding Securities (Symbols)

TeleTrader Professional offers two ways of finding the securities (symbols) that you want to display:

- You can access the most popular symbols from the QuickBar, which is a part of the Professional navigation pane.
- With Symbol Search, you can find all symbols that are available to you, based on your data package.

What is a symbol?

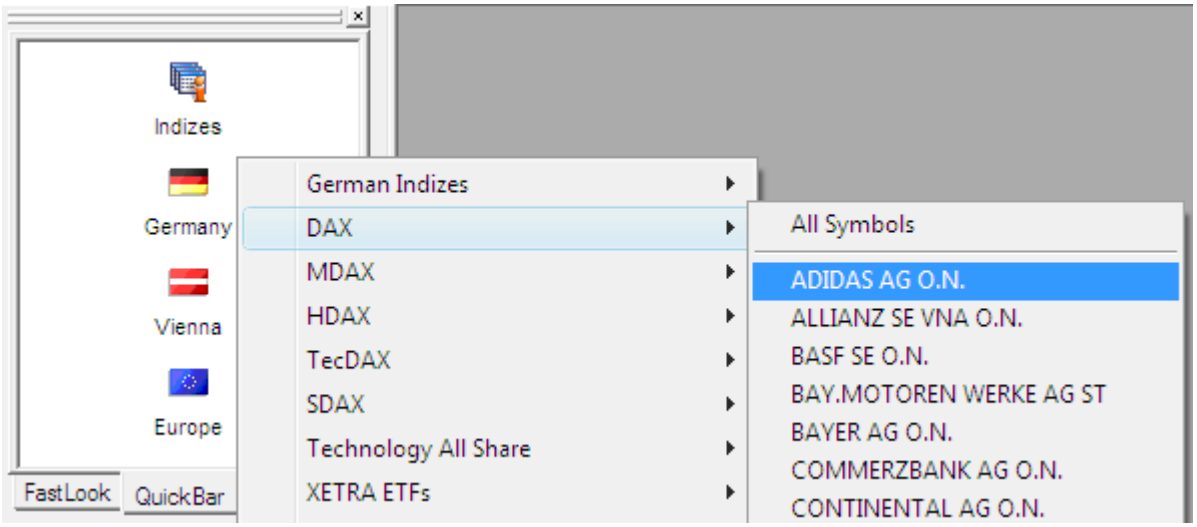
In TeleTrader Professional, all stocks, futures, options, indices and other securities are called symbols. A symbol is the unique identification given to every security that is traded on an exchange or over-the-counter market.

Each symbol has a type, which designates the category of the security or financial instrument. These categories are: Stock, Future, Index, Currency, Warrant, Bond, Mutual Fund, Interest Rate, Option, Put Option, Call Option, Certificate.

There is an additional special symbol type: The so-called *chain* symbol. This symbol does not hold data from one security, but is rather a pointer to a list of "normal" symbols of different types, like a list of index constituents. The list of symbols contained in a chain is automatically updated on the server. This means that when for example some new stocks are added to the list of index constituents, the chain list will be automatically updated. Currently, chain symbols can only be opened in price pages and time and sales documents – in other document types, you can only open the list of symbols that the chain refers to (but the list will not be updated when it changes on the server).

QuickBar

The QuickBar is a part of the Professional navigation pane, which is located on the left side of the main window. It contains prepared lists of the most popular securities (symbols) and offers fast access to news stories and information from the Web. You can open these securities in price pages, charts and other documents directly from the QuickBar menus.



If you want to customize the QuickBar, you can change its font and colors. See Customizing the QuickBar on page 141.

Normally, the QuickBar is displayed automatically when you start TeleTrader Professional. If the QuickBar is not visible, either the navigation pane was closed manually, or another view is chosen to be displayed instead of the QuickBar.

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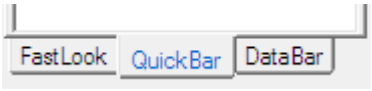
To display the QuickBar

- On the **View** menu, click **Navigation Pane**.
- In the navigation pane, click on the tab **QuickBar**.



QuickBar Content

The QuickBar consists of a list of icons. By clicking on one of the icons, you open a menu that contains different groups and symbols. For example, the icon **Europe** contains a group for each Central European country that TeleTrader provides data for.

Some QuickBar icons, such as **News**, **Symbol Tools** or **Virtual Pages**, offer different functionalities, for example opening a search mask for certificates or navigating between virtual pages.

For different versions of TeleTrader Professional, the QuickBar will display different icons. You find here a list of the most commonly displayed icons.

Indices	Overview of worldwide indices
Austria	Austrian indices, index constituents and Exchange Traded Funds
Germany	German indices, index constituents and Exchange Traded Funds
Europe	Other European indices and index constituents
USA	US indices, index constituents and selected Exchange Traded Funds.
South East Europe	Indices and index constituents from South East Europe
Central and Eastern Europe	Indices and index constituents from Central and Eastern Europe
World	Indices and index constituents from other countries
Futures	Commodities and Financials Futures Overview and selected derivatives from futures and options markets
Currencies	Currency snapshots, spot rates and forward rates from different Forex data suppliers

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Fixed Income	Interest rates (EURIBOR / LIBOR) and a variety of deposit rates, forward rates and interest rate swaps from GTIS Money Markets
News	Opens the News window: See News on page 53
Symbol Tools	Opens search masks where you can search for warrants, certificates and funds
Virtual Pages	Navigates between your virtual pages: See Switching Between Virtual Pages on page 155

To learn more about opening groups and single symbols in price pages, charts or other documents, see Opening Symbols from the QuickBar on page 31.

Note The content of the QuickBar is defined by TeleTrader and cannot be changed by the user. The support team can provide you with QuickBar updates, if needed.

Opening Symbols from the QuickBar

Each QuickBar icon holds several groups of symbols. You can either open a whole group at once in a price page document, or open a single symbol out of one group as a chart or other document.

To open a group of symbols in a price page

- Click an icon in the QuickBar.
- In the menu that appears, select the group that you want to open.
- In the submenu, select **All Symbols**.
- All symbols of this group are displayed in a price page

To open a single symbol in a chart

- Click an icon in the QuickBar.
- In the menu that appears, right-click the group which contains the symbol that you want to open.
- If the group contains more than fifty symbols, a submenu will appear dividing the symbols by alphabet (exception: Futures and Currency groups). Select the first letter of the symbol that you want to open.
- In the submenu, select a symbol.
- The symbol is displayed in a chart document by default.

Note If you want to change the default document, see Default Responses Settings on page 346.

To open a single symbol in other documents

- Click an icon in the QuickBar.
- In the menu that appears, right-click the group which contains the symbol that you want to open.
- If the group contains more than fifty symbols, a submenu will appear dividing the symbols by alphabet (exception: Futures and Currency groups). Select the first letter of the symbol that you want to open.

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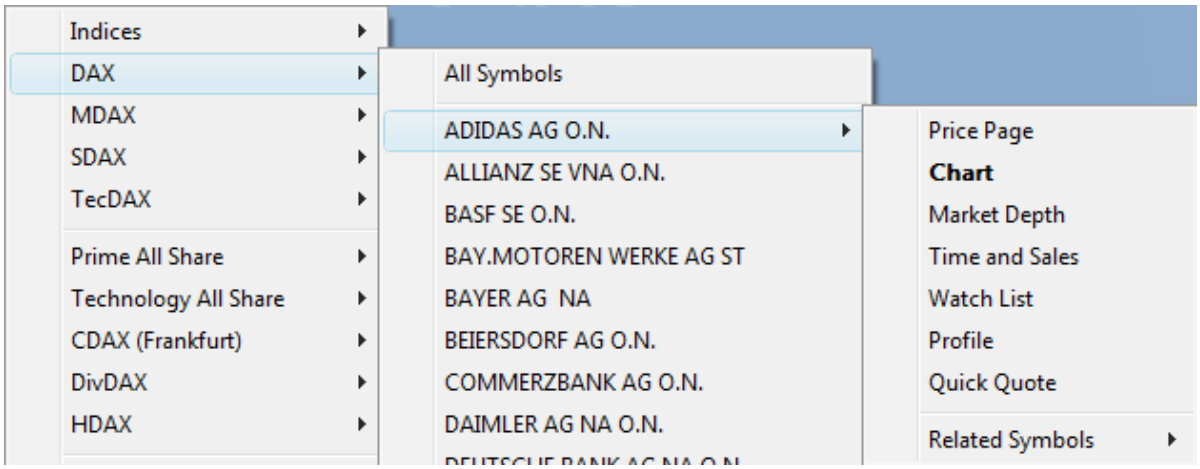
- In the submenu, right-click on a symbol (or move the mouse pointer to the symbol and wait for a moment).
- An additional menu appears:



- Choose the document type from the list. You can also use a template: Right-click the document type and choose a template from the list. Double-click the document type to use the default template.
- The symbol is displayed in the chosen document.

Note You can also open a price page with related symbols with the command **Related Symbols**. See Opening Related Symbols in a Price Page on page 71.

To copy a symbol to an existing document with drag and drop

- Click an icon in the QuickBar.
- In the menu that appears, select the group which contains the symbol that you want to open.
- In the submenu, select a symbol.
- Hold the mouse button down and move the symbol.
- Drag the symbol to its new location and release the mouse button to drop it there. Depending on the target document or window where you drop the symbol, you can choose its exact location (see Copying Symbols on page 75 for details).

Symbol Search

With Symbol Search you can find all symbols that are available in your data package. You can search for the name of a security, its ticker symbol, its ISIN or its local identification number, such as WKN. The Symbol Search dialog is shown whenever you start a search or want to insert, change or replace a symbol in one of your documents.

You can start a search from the Symbol Search toolbar, by opening the Symbol Search dialog, or by starting a search from any document.

The Symbol Search dialog is also shown automatically when you create a new document and try to change or insert symbols in a document.

After you have defined your search parameters and started the search, you can filter, sort and group the search results. You then can open one or more of the symbols in a document, or display news , company profiles and analyst recommendations for symbols. With Smart Symbol Search, you can even include all settings and the preferred document that will be opened in one search query.

You can save your search settings as a search template, or save your search results in so-called tabs.

If you want to customize the general search settings, like colors and fonts used or the behavior of the toolbar, see Symbol Search Settings on page 350.

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Searching for Securities from the Toolbar

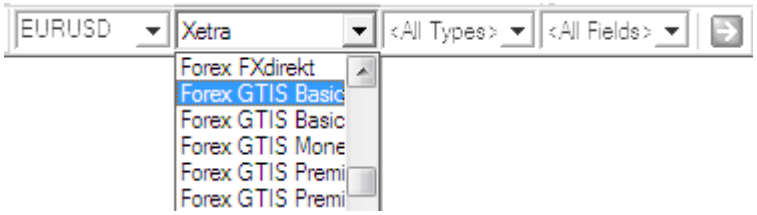
The Symbol Search toolbar is displayed in the top part of the main window and includes the basic features to start and refine your search. It consists of four fields. You enter your search term in the first field.

To start a search from the Symbol Search toolbar

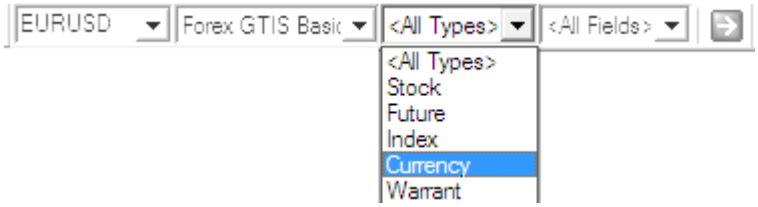
- Enter your *search term* in the first field. This can be the name of a security, its ticker symbol or ISIN.

> **Note** You can also choose a search term from a list of terms that you have used before by clicking the arrow button.

- You can optionally limit the search results to one exchange. Select the exchange from the list. All other exchanges will be ignored.



- You can also select the type of symbol that you want to search for. If you want to search for all symbol types, leave this setting to **<All Types>**.



- You can search for all characteristics (fields) of a symbol, or only search for its name, ticker symbol, ISIN or local ID (e.g. WKN).

- When you have finished your settings, click on the green button or press the ENTER key to start the search.

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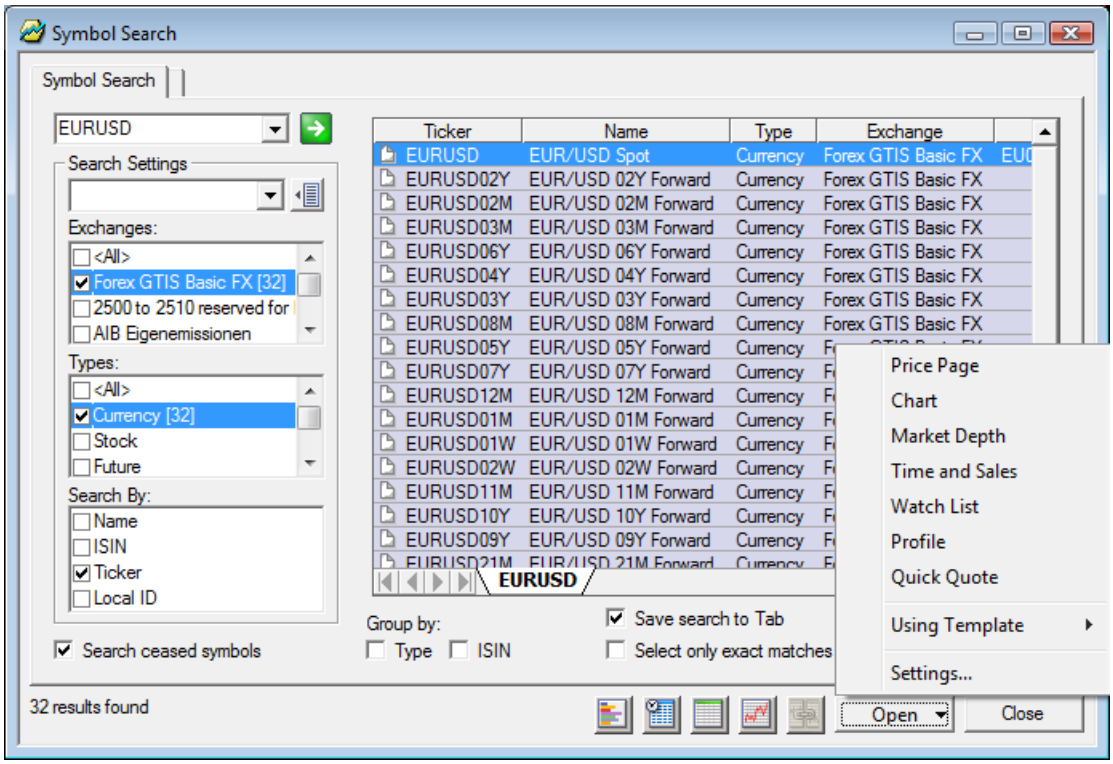
- The search results are displayed in the **Symbol Search** dialog. (If you instead want to open the search results in a price page or other document per default: See Symbol Search Settings on page 350.)



- Click on the symbol that you want to open in a document.
- Click on the **Open** button and select the document type.

> **Note** You can also display news, a company profile or analyst recommendations for most symbols. If you want to open a continuation chart for a futures contract, click on the continuation tab that appears and change the continuation settings to your needs – see Changing Continuation Settings on page 235.

Searching for Securities in the Symbol Search Dialog

The Symbol Search dialog offers more complex opportunities to refine your search. You can for example select more than one exchange or symbol type at once.

To start a search with the Symbol Search dialog

- On the **File** menu, click **Symbol Search** to display the Symbol Search dialog.
- Enter your *search term* in the first field on the left side. This can be the name of a security, its ticker symbol or ISIN.

> **Note** You can also choose a search term from a list of terms that you have used before by clicking the arrow button.

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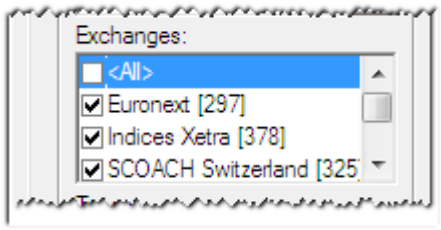
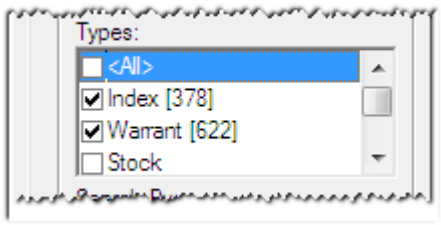
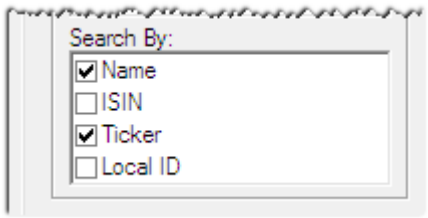
- You can optionally limit the search results to a number of exchanges. In the **Exchanges** list, select the check box next to each exchange that you want to include in your search. If you want to include all exchanges, select **<All>**.



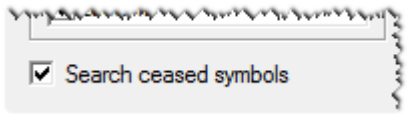
- You can also select the symbol types that you want to search for. In the **Types** list, select the check box next to each type that you want to include. If you want to search for all symbol types, select **<All>**.



- You can search for all characteristics (fields) of a symbol, or limit the search to its name, ticker symbol, ISIN or local ID (e.g. WKN). In the **Search By** list, select the check boxes next to each field that you want to include.



- You can also include ceased symbols (for example expired futures contracts) in your search. To do so, select the check box **Search ceased symbols**.



- When you have finished your settings, click on the green button or press the ENTER key to start the search.

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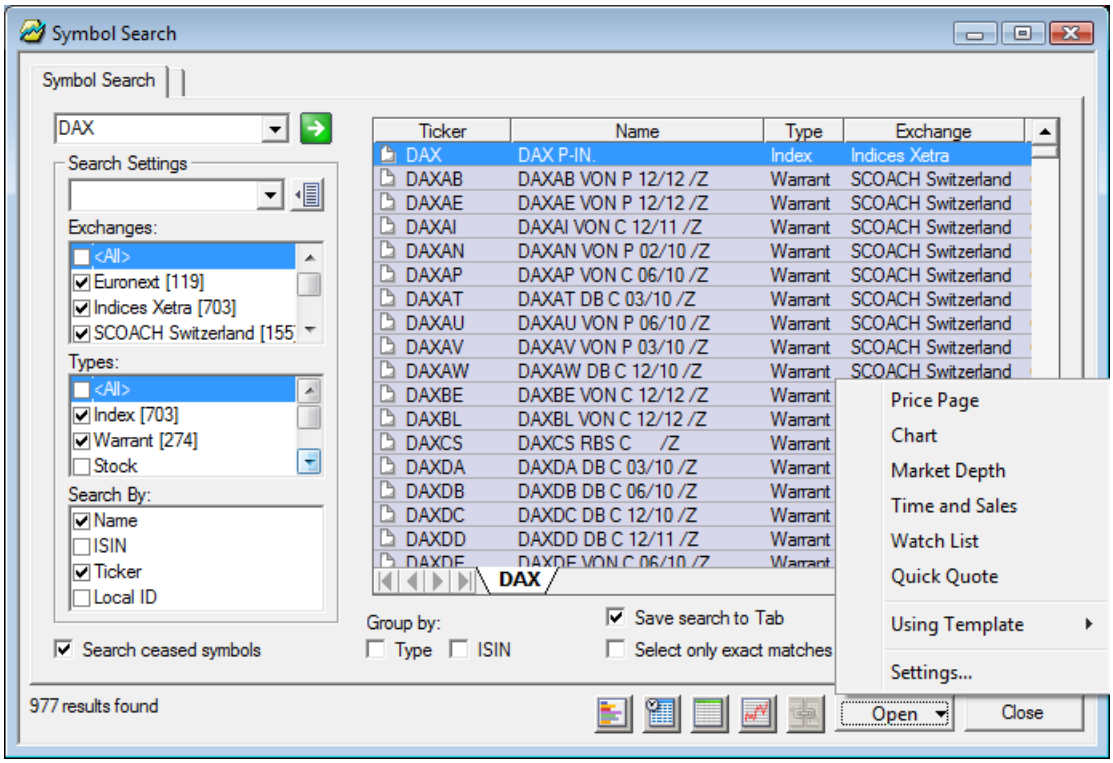
- The search results are displayed on the right side of the **Symbol Search** dialog.



- Click on the symbol that you want to open in a document.
- Click on the **Open** button and select the document type.

Note You can also display news, a company profile or analyst recommendations for most symbols. If you want to open a continuation chart for a futures contract, click on the continuation tab that appears and change the continuation settings to your needs – see Changing Continuation Settings on page 235.

Filtering Search Results

When the search results are displayed in the Symbol Search dialog, you can then filter the results. You can also remove some or all symbols from the search result set.

To filter the search results by exchange

With this filter, you can show symbols that are traded on a certain exchange (e.g. only NASDAQ listings).

- In the **Exchanges** list, click on the names of the exchanges that you want to include in the search results.

Note Click on the *name* of the exchange, do not select or clear the check box next to it.

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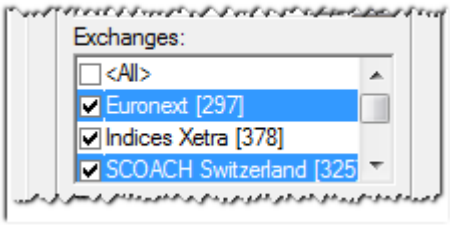
- The exchanges that you included in your filter are highlighted.



- The search results that are not traded on these exchanges are hidden in the results pane.

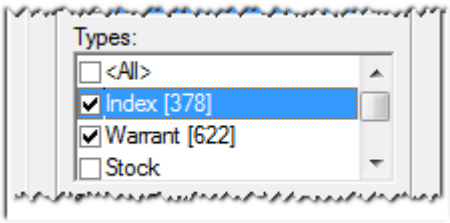
To filter the search results by symbol type

With this filter, you can show symbols with a certain symbol type (e.g. only stocks and indices).

- In the **Types** list, click on the names of the symbol types that you want to include in the search results.

> **Note** Click on the *name* of the type, do not select or clear the check box next to it.

- The symbol types that you included in your filter are highlighted.



- The search results that do not have these symbol types are hidden in the results pane.

To filter the search results by selection

With this filter, you can show symbols that have similar content with another symbol that you select.

- Right-click on a symbol in the column that you want to choose as your filter. For example, right-click in the **ISIN** column of a symbol.
- Choose **Filter By Selection**.
- The search results that do not have the same content in this column as the symbol that you selected are hidden in the results pane.

To remove filters

When you want to display all search results again, you have to remove the filters.

- In the **Exchanges** or **Types** list, click on **<All>** to remove exchange and symbol type filters.
- In the results pane, right-click on any symbol and choose **Remove Filter** to remove selection filters.
- All search results are now shown again in the results pane.

To remove symbols from the search results

- Right-click on the search result that you want to remove from the list and choose **Remove**.
- If you want to clear the list, choose **Remove All**. To remove all results except the one that is highlighted at the moment, choose **Remove All Except**.

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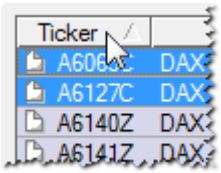
Sorting and Grouping Search Results

You can sort your search results by column, or group them by their ISIN or symbol type.

To sort the search results by column

You can sort your search results by all columns that are displayed in the results pane. You can only sort by one column at the same time.

- Click on the column header that you want to sort by.



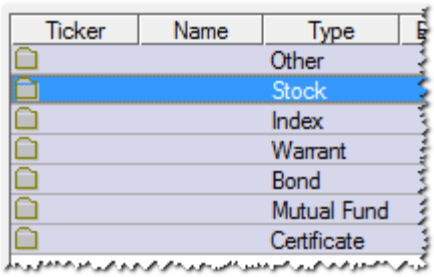
- To change the order from ascending to descending, click on the column header again.

To group the search results by ISIN or symbol type

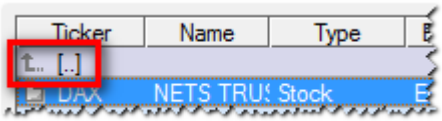
When you group your search results, the symbols are visually arranged into different folders. You can either group by ISIN or symbol type.

- In the **Group by** section, select the **ISIN** or **Type** checkbox.

- The symbols are visually arranged into folders.



- To show the symbols inside a folder, double-click the folder.
- To return to the folder view, double-click the return icon in the first line of the results pane.



Opening Symbols from the Search Results

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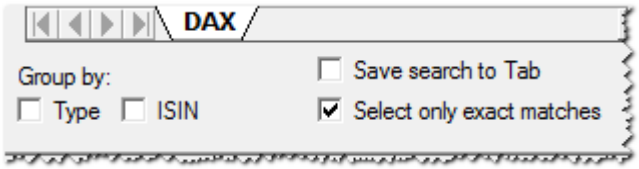
You can open one or more symbols from the search results in a document, for example a price page or chart. First, you have to select the symbol(s) that you want to open. Then, select the document type.

Note You can also display news, a company profile or analyst recommendations for most symbols.

To select symbols from the search results

- To select *one symbol*, click on it.
- To select *several symbols* at once, click on the first symbol, hold the CTRL key, and then click on all other symbols you want to select.
- To select *several consecutive symbols*, click on the first symbol, hold the SHIFT key, and then click on the last symbol.
- To select *all symbols*, right-click on any symbol and choose **Select all**.
- To select only symbols whose ticker, name or ISIN *match your search term exactly*, select **Select only exact matches** in the **Group by** section.



Note **Select only exact matches** is activated by default.

To open market depth, time and sales, price page or chart documents for selected symbols

- Click on one of the document buttons:

Market Depth

Time and Sales

Price Page

Chart

Continuation Chart (only available for futures)

Note If you have selected several symbols, and open a new price page, watch list or time and sales document for them, by default all symbols will be combined in one document. If you keep the CTRL key pressed while choosing the document type, each symbol will be opened in a separate document.
If you open a new chart document while selecting several symbols, holding the CTRL key will open overlaid symbols in one chart pane. To open every symbol in its own chart pane, hold both the CTRL + SHIFT while choosing the document type **Charts**.
If you open a chain symbol (pointer to a list of symbols, for example DAX#XETRA), this is treated in the same way as opening several symbols at once for most documents. Special treatment of chain symbols is only possible in price pages (see Displaying Chain Symbols in a Price Page on page 101) and time and sales documents (see Displaying Chain Symbols in Time and Sales on page 124).

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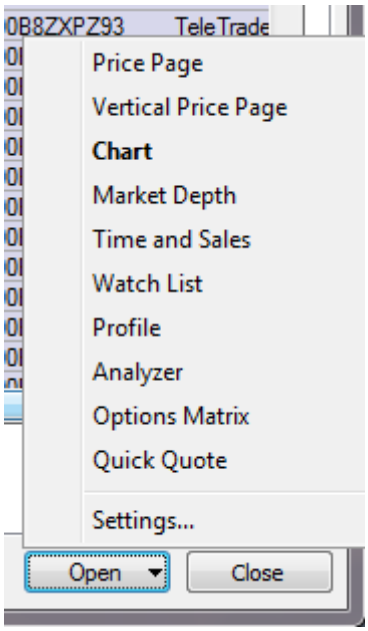
To open other documents for selected symbols

- Click on the **Open** button.
- Select the document type that you want to open.



Note You can also right-click the selected symbols and select **Open**.

To open market depth, price page or chart documents for continuation symbols (futures)

For futures symbols, you can open a continuation contract in any document, for example a price page or chart:

- Click on the futures contract that you want to open as a continuation symbol.
- Click on the **Continuation** tab in the top left corner of the Symbol Search dialog.
- Adapt the continuation settings to your needs, that is, define how the continuation symbol should be constructed out of the individual futures contracts (see Changing Continuation Settings on page 235).
- Click on one of the document buttons:

Market Depth

Price Page

Chart

Note You can also open the continuation symbol in other document types by clicking the **Open** button and selecting the document type that you want to use (for example vertical price page, watch list, etc.).

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Available options for opening symbols

The symbols are opened differently depending on what option you choose:

- **Price Page**: If you selected several symbols, they will all be displayed in one price page. See Price Page on page 48.
- **Chart**: An individual chart document is opened for each symbol. See Chart on page 52.
- **Continuation Chart**: A continuation chart document is opened for each symbol. This option is only available for futures. See Continuous Contracts / Continuation Charts on page 234.
- **Search News**: News stories for the selected symbols are displayed, if available. See News on page 53.
- **Market Depth**: An individual market depth document is opened for each symbol. See Market Depth on page 55.
- **Time and Sales**: If you selected several symbols, they will all be displayed in one time and sales document. See Time and Sales on page 56.
- **Options Matrix**: An individual options matrix document is opened for each symbol. See Options Matrix on page 59.
- **Watch List**: If you selected several symbols, they will all be displayed in one watch list. See Watch List on page 58.
- **Profile**: Company profiles for the selected symbols are displayed, if available. See Profile on page 60.
- **Analyzer**: Analyst recommendations for the selected symbols are displayed, if available. See Analyzer on page 61.
- **Quick Quote**: An individual quick quote document is opened for each symbol. See Quick Quote on page 63.

Note If you want to open a document with a specific template, click on **Open**, right-click the document type and select a template. Double-click the document type to use the default template.

Calling Symbol Search from a Document

The Symbol Search can be called directly from within a document. Simply enter the search term on the keyboard and proceed with the normal symbol search procedure.

- In any document, start typing the search term on the keyboard.
- An input field appears.

- Proceed with entering your search term and press the ENTER key when finished.
- The Symbol Search dialog is displayed with the search results for your search term.
- Click on the symbol that you want to open.
- Click **OK**.

Note The new symbol will replace the previous symbol in the document. In price pages and watch lists, only the symbol in the active row will be replaced (except in case of chain symbols in price pages, where all symbols in the document will be replaced). In time and sales documents, the symbol will either be added to the document (when you started the search in the time and sales view), or the symbol in the active row will be replaced (when you started the search in the price page view), or all symbols will be replaced (in case of chain symbols). In the options matrix, the underlying symbol will be replaced.

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Smart Symbol Search

Smart Symbol Search uses a special syntax to make it possible to conduct a complete search with using only keyboard commands. You can limit a search to certain exchanges and symbol types without using the Symbol Search dialog interface. You can also define with what document type the search results will be opened afterwards. The Symbol Search dialog will only be shown when there is more than one result for your search.

To start a Smart Symbol Search

You can use the Smart Symbol Search commands everywhere where you can also start a normal search:

- Enter the Smart Symbol Search commands in the first field of the Symbol Search toolbar; see Searching for Securities from the Toolbar on page 33
- Enter the commands in the search field of the Symbol Search dialog; see Searching for Securities in the Symbol Search Dialog on page 34
- Enter the commands in any document; see Calling Symbol Search from a Document on page 41
- Enter the commands in the Change Symbol dialog; see Changing Symbols on page 73

Syntax of Smart Symbol Search

Smart Symbol Search works with separators to distinguish between the different parts of a search query.

A *search query* consists of four parts:

Symbol	Search term for the desired symbol. For example: `EURUSD, MSFT, DAX`
Exchange	Beginning of the exchange or market name. If you enter only some letters, all exchanges that match these letters will be included in the search. For example: `XE` will include Xetra, Xetra European Stars and Xetra US Stars
Type	Beginning of the symbol type name. If you enter only some letters, all symbol types that match these letters will be included in the search. For example: `S` will include Stocks, but `I` will include Index and Interest Rate
Document	New document that will be opened automatically when a single result is returned by the search. In all other cases, the Symbol Search dialog will be displayed with the search results. `C` Chart `P` Price Page `T` Time and Sales `O` Options Matrix `M` Market Depth `N` News `CO` Continuation Chart `Q` Quick Quote

In a search query, you do not have to use all four parts. You can:

- Skip parts at the end by simply not adding them, for example: `MSFT.NASDAQ`
- Skip parts in the middle by typing two separators instead of one, for example: `MSFT..S.C`

The following *separators* can be used for Smart Symbol Search by default: full stop (**.**), hyphen (**-**), comma (**,**), plus sign (**+**).

It does not make a difference which separator you use, but you must stick to one separator in each search query, that means you cannot mix separators.

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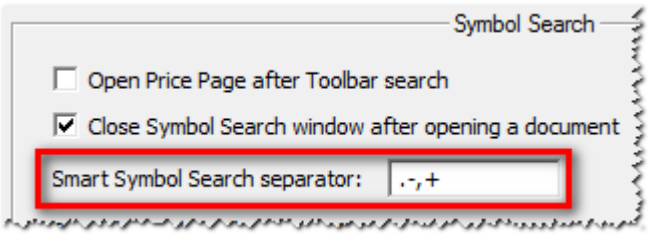
Examples

`GOOGLE-XE-S-C`	Opens a new chart with the Google stock on Xetra. Exchanges included in the search were also Xetra ETF, Xetra European Stars and Xetra US Stars.
`MSFT,NASDAQ`	When called from the Symbol Search toolbar, opens the Symbol Search dialog with the Microsoft stock on NASDAQ (as no document is specified, the dialog is opened). When called from within a document, the search result will replace the symbol that was previously shown there.
`EURUSD+FOREX+C`	Opens the Symbol Search dialog with results for the EURUSD currency pair on all markets that start with "Forex".
`FDAX 2008Z..F.CO`	Opens a continuation chart for the December 2008 FDAX future. Note that no exchange was specified in the second part of the query.

To customize Smart Symbol Search separators

The Smart Symbol Search separators can be customized.

- On the **Tools** menu, click **Options**.
- In the left pane, choose **Symbol Search**.
- In the right pane, modify the separators for Smart Symbol Search:


Symbol Search
Open Price Page after Toolbar search
Close Symbol Search window after opening a document
Smart Symbol Search separator:
.-,+

- Click **OK**.

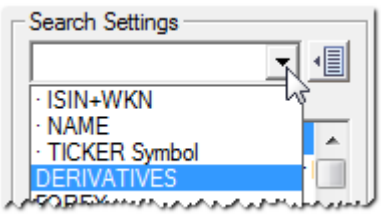
Note It is recommended not to add the colon (**:**) or the space character (blank) as a separator, as they are part of some symbol names.

Creating and Using Search Templates

You can save your search settings in a search template. This means that you can e.g. create a template to search for futures on Eurex. Several search templates have been predefined already. You can change them or create your own additional search templates.

To use a search template

- Click on the **Search Settings** arrow.



- Choose a search template from the list.

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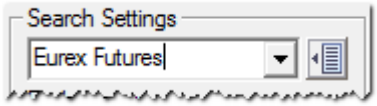
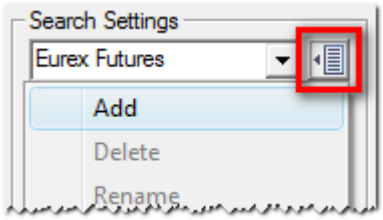
- Enter your search terms and start the search.

To create a new search template

- Choose your settings in the **Exchanges**, **Types** and **Search By** lists. For example, select "Eurex" in the **Exchanges** list and "Future" in the **Types** list.
- In the **Search Settings** box, enter the name for your search template.



- Click on the **Search Template** button and choose **Add**. The search template is now saved.



- Enter your search terms and start the search.

To change an existing search template

- Choose your settings in the **Exchanges**, **Types** and **Search By** lists.
- Click on the **Search Template** button and choose **Save as**.
- Choose the template that you want to change. The new settings are saved in this template and replace the old settings.

To set a default search template

- Click on the **Search Settings** arrow and choose the template that you want to use as default.
- Click on the **Search Template** button and choose **Set As Default**.

> **Note** The default template is used when opening the Symbol Search dialog (see Searching for Securities in the Symbol Search Dialog on page 34), creating a new document with **File > New Document** (see Opening Symbols in New Documents on page 64), and when inserting symbols into a document (see Inserting Symbols on page 74).

To rename a search template

- Click on the **Search Settings** arrow and choose the template that you want to rename.
- Click on the **Search Template** button and choose **Rename**.

To delete a search template

- Click on the **Search Settings** arrow and choose the template that you want to delete.
- Click on the **Search Template** button and choose **Delete**.

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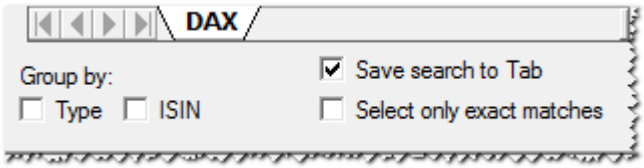
Saving Search Results to Tabs

You can automatically save your search results in the Symbol Search dialog. Each search results page is then available as a tab:

New tabs are created automatically for each search as long as the option **Save search to Tab** is enabled:



To restart the search for a tab

You can start the search that is saved in a tab again with the same (or different) settings, in order to find new results or reload the previous search results.

- Click on the tab to make it active.
- The search settings for this saved search are displayed on the left side of the Symbol Search dialog. You can change these settings if necessary.
- Right-click on the tab and choose **Restart Search**.

To rename a tab

> **Note** The name of a tab is equal to its search term. If you rename a tab and then restart the search on this tab, it will be conducted with the new search term (name) that you entered.

- Right-click on the tab and choose **Rename**.
- Enter the new name and press the ENTER key.

To move a tab

- Click on the tab and hold the mouse button down.
- Drag the tab to the desired location and release the mouse button.

To delete a tab

- Right-click on the tab and choose **Delete**.

To delete all tabs

- Right-click on any tab and choose **Delete All**.

To delete all tabs except the active one

- Click on the tab that you want to keep to make it active.
- Right-click on the tab and choose **Delete All Except**.

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Displaying Symbols and Other Data

TeleTrader Professional can be used to display quote data for a wide range of securities, as well as current news from all over the world, fundamental data such as company profiles or financial figures, and analyst recommendations.

Quote data can be visualized in different ways, depending on your needs. For example, if you want to display the last price of several symbols at once, you will probably choose a tabular layout, as in a price page or watch list. If you want to show the development of historical and current data for one symbol at once, you will choose a chart where you can see the whole time series of a symbol.

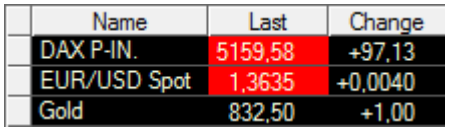
News stories, company profiles and analyst recommendations can be requested specifically for a symbol. News headlines can also be displayed in a constantly updating overview.

In TeleTrader Professional, you can display symbols, their quote data and other data in *documents,* or in a *pop-up window* or *pane*.

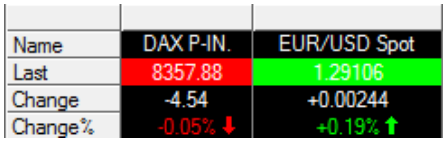
Professional documents

Documents are windows displayed inside the Professional main window. Each document shows a different view of the data and offers different functions. You can create as many documents as you like and save them inside a workspace.

The following document types are available:

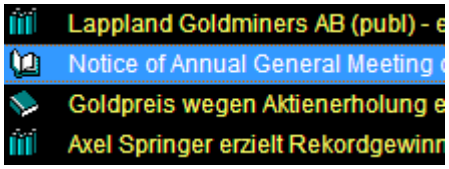


Price Page — Overview of symbols in a table

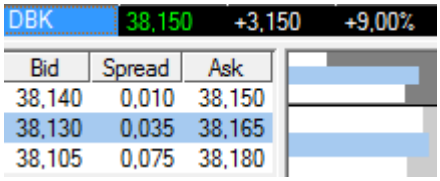


Vertical Price Page — Overview of symbols in a table in transposed view compared to "classic" price pages

Chart — Visualization of the time series of a symbol


Lappland Goldminers AB (publ) - e
Notice of Annual General Meeting
Goldpreis wegen Aktienerholung e
Axel Springer erzielt Rekordgewinn

News — Current news from all over the world



Market Depth — Summary of all orders that are currently in the market

Time and Sales — Chronological list of all orders and trades

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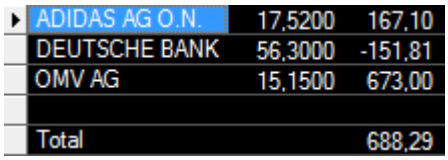
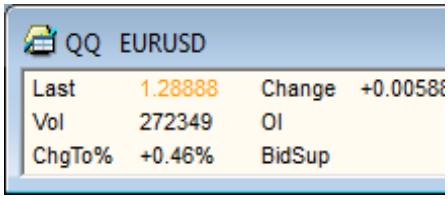
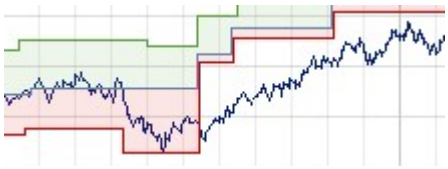
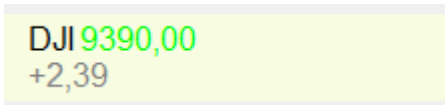
	**Watch List**	Overview of symbols with basic portfolio functionality
	Options Matrix	Matrix of Call and Put options for an underlying, grouped by strike price or expiration date
	**Quick Quote**	Current price activity of one symbol
	Profile	Fundamental values, company information and balance sheet data
	**Analyzer**	Graphical representation of analyst recommendations *Note*: The Analyzer is not included in all data packages.
	Web Watch	Any web page in an embedded browser window

Ticker pane

The Ticker pane also shows quote data on the screen. Unlike documents, you can only display it on the screen once.

	**Ticker**	Live ticker with several symbols

What is a symbol?

In TeleTrader Professional, all stocks, futures, options, indices and other securities are called symbols. A symbol is the unique identification given to every security that is traded on an exchange or over-the-counter market.

Each symbol has a type, which designates the category of the security or financial instrument. These categories are: Stock, Future, Index, Currency, Warrant, Bond, Mutual Fund, Interest Rate, Option, Put Option, Call Option, Certificate.

There is an additional special symbol type: The so-called *chain* symbol. This symbol does not hold data from one security, but is rather a pointer to a list of "normal" symbols of different types, like a list of index constituents. The list of symbols contained in a chain is automatically updated on the server. This means that when for example some new stocks are added to the list of index constituents, the chain list will be automatically updated. Currently, chain symbols can only be opened in price pages and time and sales documents – in other document types, you can only open the list of symbols that the chain refers to (but the list will not be updated when it changes on the server).

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Price Page

You use a price page document when you want to display an overview of several symbols. A price page displays symbols in a table, which is similar to popular spreadsheets.

Note You can even export quote data from a price page to a spreadsheet software. See RTD – Retrieving Real-Time Data with Excel on page 364 and DDE – Dynamic Data Exchange with Excel / Open Office on page 366.

Each row holds a symbol

The *rows* of a price page each hold one symbol and its data.

Each row has a so-called *row header* on the left. When you click on a row header, you select the whole symbol and can then for example move it, change it or delete it.

The row header also shows which row is active at the moment: The *active row* is marked with an arrow sign. This arrow is usually black. When it is red, this means that you have switched to the *highlight mode*. In highlight mode you can show additional data about the symbols of your price page in linked documents (charts, time and sales, news, market depth, options matrix and quick quote).

Price pages can also display chain symbols, which are symbol lists that are automatically updated on the server (for example, a list of index constituents).

Learn more:

- Rearranging and Resizing Rows and Columns on page 81
- Sorting the Contents of a Price Page on page 88
- Selecting Rows or Columns of a Price Page on page 89
- Linking Documents to a Price Page on page 89
- Displaying Chain Symbols in a Price Page on page 101

Each column holds a data field

The data that belongs to one symbol is organized in *columns*. The header of the column shows the name of the data field that is displayed in this column. You can choose which columns should be displayed in a price page.

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You can assign an *update style* to some columns, which means that a visual effect is displayed whenever new quotes arrive, depending on whether for example the price moved up or down. You can also define the number of decimals that is used for a column.

The data inside the columns is organized in single *cells*. Each cell holds the a single value for a specific symbol.

> **Note** For delayed symbols, the number of delayed minutes is displayed in square brackets in the column **Ticker**. In case a symbol is currently not available to you, the text "Not authorized" will appear in the column **Name**.

Learn more:

- Adding and Removing Columns on page 80
- Changing the Update Style of a Column on page 83
- Changing the Number of Decimal Places on page 83
- Freezing a Column on page 89

Studies and expressions (formulas) in price pages

TeleTrader Professional offers a large amount of analysis tools (studies) to calculate indicators and signals. All available TeleTrader studies that can be shown on a chart, including custom studies that you wrote yourself, can also be shown in a price page.

For less complicated calculations, or calculations that need to take into account fields that are only shown in a price page (such as fundamental data), you can also use so-called *price page expressions*. Those are mathematical calculations that use simple formulas to calculate a result of the values already visible on your price page.

Learn more:

- Adding, Removing and Customizing Study Columns on page 91
- Inserting Price Page Expressions on page 94

Volume Weighted Average Price (VWAP) columns

You can extend your price page to show several VWAP columns: The Volume Weighted Average Price, its standard deviation and other associated values. All VWAP calculation parameters can be customized.

Learn more:

- Adding, Removing and Customizing the VWAP Columns on page 98

News Flash columns

You can show the latest related news stories for a symbol in a price page. The **News Flash** button displays the number of recent news stories; the **News Headline** column displays the latest headline.

Learn more:

- Adding, Removing and Customizing the News Flash Columns on page 100

Headers and sheets

To organize your price page, you can use *headers*, which form groups of rows, and *sheets*, which are represented by tabs at the bottom of the price page. Headers also show the number of advancing and declining symbols in a group of rows.

Learn more:

- Inserting, Changing and Removing Headers on page 86
- Adding and Organizing Sheets on page 87

Adapt the appearance of a price page to your needs

You can change the appearance and color of the grid lines of a price page, the font of the price page texts, the color of the text and the background color of the price page.

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Learn more:

- Changing the Grid Style on page 84
- Changing Font and Colors on page 85

Get notifications when prices change or news come in

To get an automatic notification (sound, message or e-mail) when the price of a symbol reaches a certain level, use price alerts. You can also be notified with a news alert whenever a specific keyword or phrase shows up in an incoming news story.

Learn more:

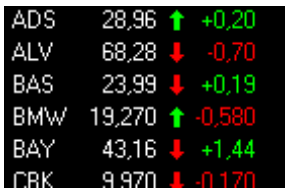
- Price Alerts on page 321
- News Alerts on page 325

Alternative templates: Market Watch, My Market Watch, Last & Net Change

For price pages, three additional standard templates are available. They show the data in a more condensed way.

Market Watch

My Market Watch

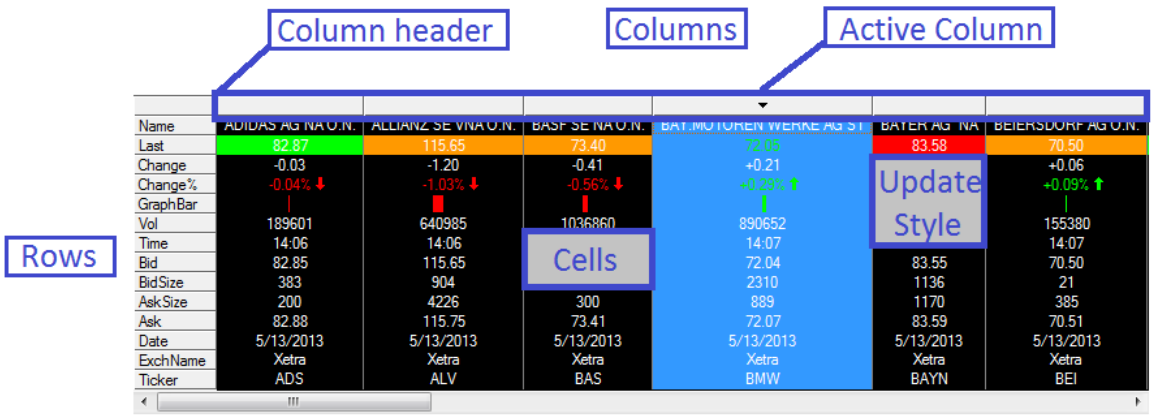


Last & Net Change

Note The possibilities to customize price page based on these templates are restricted. You can assign update styles and change the font and colors. For **My Market Watch**, you can also add and remove columns (data fields).

Vertical Price Page

The Vertical Price Page document shows symbols in columns and fields in rows (the data is transposed compared to "classic" price pages). They offer the same functionality as "classic" price pages (only with columns / rows reversed), with the following exceptions: No sorting functionalities, no headers and sheets, no VWAP, no column freezing, no support for chain symbols.



Each column holds a symbol

The *columns* of a vertical price page each hold one symbol and its data.

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Each column has a so-called *column header* on the top. When you click on a column header, you select the whole symbol and can then for example move it, change it or delete it.

The column header also shows which column is active at the moment: The *active column* is marked with an arrow sign. This arrow is usually black. When it is red, this means that you have switched to the *highlight mode*. In highlight mode you can show additional data about the symbols of your vertical price page in linked documents (charts, time and sales, news, market depth, options matrix and quick quote).

Learn more:

- Rearranging and Resizing Rows and Columns on page 81
- Selecting Rows or Columns of a Price Page on page 89
- Linking Documents to a Price Page on page 89

Each row holds a data field

The data that belongs to one symbol is organized in *rows*. The header of the row shows the name of the data field that is displayed in this row. You can choose which row should be displayed in a vertical price page.

You can assign an *update style* to some rows, which means that a visual effect is displayed whenever new quotes arrive, depending on whether for example the price moved up or down. You can also define the number of decimals that is used for a row.

The data inside the row is organized in single *cells*. Each cell holds the a single value for a specific symbol.

Learn more:

- Adding and Removing Columns on page 80
- Changing the Update Style of a Column on page 83
- Changing the Number of Decimal Places on page 83

Studies and expressions (formulas) in vertical price pages

TeleTrader Professional offers a large amount of analysis tools (studies) to calculate indicators and signals. All available TeleTrader studies that can be shown on a chart, including custom studies that you wrote yourself, can also be shown in a vertical price page.

For less complicated calculations, or calculations that need to take into account fields that are only shown in a price page (such as fundamental data), you can also use so-called *price page expressions*. Those are mathematical calculations that use simple formulas to calculate a result of the values already visible on your vertical price page.

Learn more:

- Adding, Removing and Customizing Study Columns on page 91
- Inserting Price Page Expressions on page 94

News Flash columns

You can show the latest related news stories for a symbol in a price page. The **News Flash** button displays the number of recent news stories; the **News Headline** column displays the latest headline.

Learn more:

- Adding, Removing and Customizing the News Flash Columns on page 100

Adapt the appearance of a vertical price page to your needs

You can change the appearance and color of the grid lines of a vertical price page, the font of the vertical price page texts, the color of the text and the background color of the vertical price page.

Learn more:

- Changing the Grid Style on page 84
- Changing Font and Colors on page 85

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Chart

A chart document shows a visual representation of the whole time series of a symbol. You can display more than one symbol in a chart, and also add studies (indicators or signals) or drawing objects (for example trend lines) to a chart.

Data compressions & chart types

The symbol (time series) displayed in a chart can be visualized with different chart types (for example line, bar, candlestick, Point and Figure) and data compressions (monthly, weekly, daily, intraday or tick charts).

To show the historical data of the chart in a tabular format, you can use the Data Table View.

Learn more:

- Changing the Data Compression on page 175
- Changing the Chart Type on page 176
- Inserting, Overlaying and Changing Symbols in a Chart on page 187
- Customizing the Time Series on page 216
- Displaying the Data Table View on page 214

Chart panes

Each chart can have one or more panes. You can display different symbols or studies in a chart pane. You can customize the appearance of a chart pane and its header.

Learn more:

- Creating and Organizing Chart Panes on page 209
- Customizing the Chart Background and Headers on page 225
- Navigating and Organizing a Chart on page 204

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Scales

Each chart has a horizontal time scale and a vertical price scale. If you display more than one symbol in one chart pane, you can also add a second price scale to the chart.

Learn more:

- Changing the Type of the Price Scale on page 185
- Reading Values from a Chart on page 212
- Customizing Price and Time Scales on page 228

Sheets

Similar as with price pages, you can organize your chart with sheets. Each sheet can have a different data compression or chart type.

Learn more:

- Using Sheets in Charts on page 211
- Navigating and Organizing a Chart on page 204

Get notifications when prices change, chart objects intersect or signals appear

To get an automatic notification (sound, message or e-mail) when the price of a symbol reaches a certain level, use price alerts. You can also get a notification when two chart objects that are in the same chart pane cross (so-called intersection alert). These chart objects can for example be drawing objects (trend line, Fibonacci levels, etc.) or studies (trigger lines, intersections with the time series, etc.). Use study alerts to get notified whenever a new signal marker (*Buy* / *Sell* signal) appears on the chart.

Learn more:

- Price Alerts on page 321
- Intersection Alerts on page 326
- Study Alerts on page 328

News

A news document shows an overview of several news stories with their headlines. Each headline has a marker indicating whether the story has already been read.

Note System messages informing you for example about exchange outages are also displayed as news stories coming from the news service "TeleTrader Professional" and using a special news template.

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Date
Time
Headline
25.02.2009 14:58:00 Ad hoc: GROUP Business Software AG - DGAP-Adhoc: GROUP Business Softwar
Open 2009 14:49:00 Experten: 2010 geht es in Europa wieder aufwärts
25.02.2009 14:46:00 Ölpreis klettert vor US-Lagerbestandsdaten über 40 Dollar
25.02.2009 14:45:00 Lappland Goldminers AB (publ) - extra general meeting
Not Read 14:40:00 Notice of Annual General Meeting of Tekla Corporation
25.02.2009 14:36:00 Goldpreis wegen Aktienerholung etwas schwächer
25.02.2009 14:36:00 Axel Springer erzielt Rekordgewinn
Read 2009 14:33:00 Schanghai schafft starken Rebound; Schließt im Plus
25.02.2009 14:28:00 Anglo Pacific Group PLC - Preliminary Results 2008
Headlines
Story
Mittwoch, 25. Februar 2009 -- Experten: 2010 geht es in Europa wieder aufwärts
München (BoerseGo.de) - Die meisten Länder der Europäischen Union bekommen die weltweite Rezession zu spüren. Wie der neueste Bericht der internationalen Ökonomen-Gruppe EEAG zeigt, dürfte die Wirtschaft im Euroraum in diesem Jahr im Durchschnitt um 2,0 Prozent schrumpfen. Im Gegensatz zu früheren Abschwungphasen könne das Schrumpfen des einen Landes diesmal nicht vom Wachstum eines anderen aufgefangen werden, denn die ganze westliche Welt sei von der Rezession erfasst. Zwar werde es im Euroraum 2010 beim Sozialprodukt wieder etwas aufwärts gehen mit einem minimalen Wachstum von 0,2 Prozent, doch die Arbeitslosigkeit werde weiter steigen. Durch seine Abhängigkeit von Exporten werde Deutschland im Vergleich zu anderen Ländern besonders stark von der Rezession getroffen. Die EEAG-Experten rechnen für Deutschland im laufenden Jahr mit

News overview or specific news for a symbol

You can decide whether you want to see a news overview with current, updating news from all over the world, or a news document that only shows relevant news for one specific symbol. You can also display the latest news headline for a symbol in price pages.

Learn more:

- Displaying News for a Symbol on page 68
- Adding, Removing and Customizing the News Flash Columns on page 100

Displaying headlines or stories

The news document is usually split in two parts, with the top part showing the news headlines, and the bottom part showing the open story. You can instead display only headlines, or only the news story, and adapt the colors and font used to your needs.

Learn more:

- Showing and Hiding News Headlines and Stories on page 106
- Changing Font, Colors and Headline Data of News on page 107

Filtering and searching for keywords

You can filter the news stories that are shown in a news document by news service, category, keyword or range. In addition, you can search for keywords or phrases in a news story or in the headlines. To get an automatic notification whenever a news story with specific content arrives, use news alerts.

Learn more:

- Filtering News Stories on page 107
- Searching for Keywords in News on page 108
- Quick Keyword Search in News on page 110
- News Alerts on page 325

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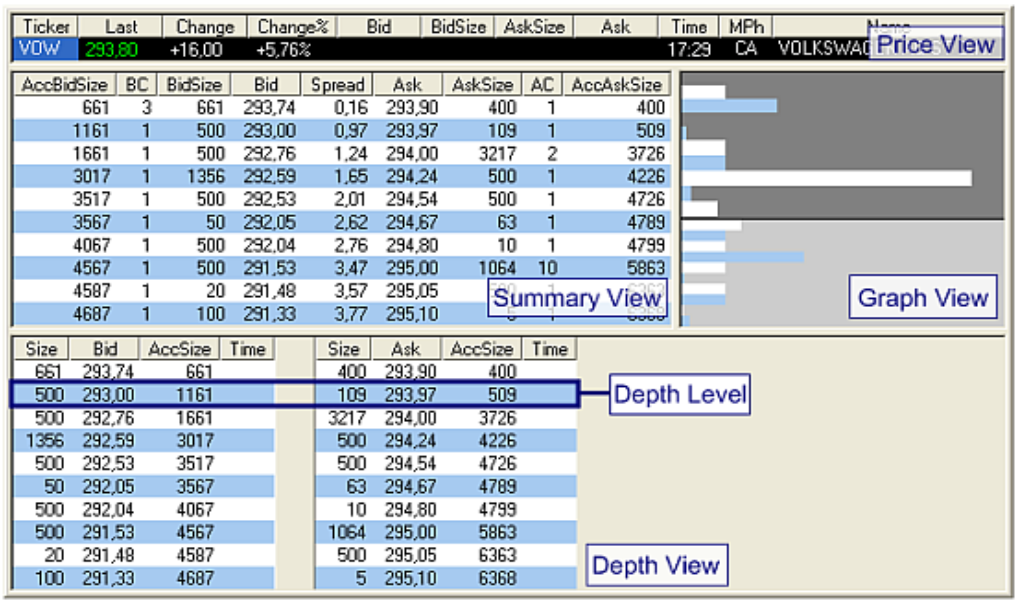
Market Depth

In a market depth document, you can see a summary of all orders that are currently in the market. The document is continuously updated as new orders arrive and existing orders are filled or being pulled from the market.

A market depth document consists of four parts, or views. The orders that are currently in the market are grouped by their depth level in every view. Each depth level can be colored differently.

Note Market depth is only available if the exchange provides the necessary data.



Learn more:

- Showing and Hiding Views on page 111
- Setting the Maximum Number and Colors for the Depth Levels in Market Depth on page 115
- Filtering Information in Market Depth on page 115

Price view

The price view displays the inside market quote for the symbol (highest bid and lowest ask price) in columns – think of it as a price page with only one symbol. It can be customized in the same way as a price page: You can insert and rearrange columns, change the update style of a column and customize font, colors and grid lines.

Learn more:

- Customizing the Price View on page 112

Summary view

The summary view shows a table with a summary of all orders that are in the market, grouped by depth level. The best bids and asks are displayed at the top. You can see the bid / ask prices of each level, the calculated spread, the number and accumulated size of the orders at this level, and the accumulated size of orders over all levels.

Learn more:

- Customizing the Summary View on page 112

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Graph view

The graph view visualizes the data displayed in the summary view. Each bar represents a depth level. The length (or height) of the bar represents the size of the orders at this depth level. The bars can be displayed vertically (ask bars are shown in the top part) or horizontally (ask bars are shown in the right part).

The graph view is divided into two sections: The *ask* section and the *bid* section. The background color for each section can be set individually. You can also choose if you want the two sections to take up the same amount of space (fixed separation line), or if you want to see which side has more orders with a floating separation line.

Learn more:

Customizing the Graph View on page 113

Depth view

The depth view shows all bids and asks side by side. It shows more detailed data than the summary view (at the moment only available for NASDAQ). The best bids and asks are displayed at the top.

Learn more:

Customizing the Depth View on page 114

Time and Sales

The time and sales document is a chronological list that shows all market activity of one or several symbols. Each bid and ask that is in the market and each trade that takes place on the exchange is listed here row by row. You can also use the time and sales document to verify the quotes of a symbol. Each time and sales document consists of two views: The price page view and the time and sales view.

Time and sales data for multiple symbols or for one single symbol

You can display the market activity for a single symbol, or all trades, bids and asks for multiple symbols. By default, all new time and sales documents show the time and sales data for all symbols at once. You can also switch between the symbols manually instead. In addition, you can add and remove symbols, and assign a different color to every symbol.

Time and sales documents can also display chain symbols, which are symbol lists that are automatically updated on the server (for example, a list of index constituents).

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To organize the contents of a time and sales documents, you can use sheets – in each sheet, you can use different columns, colors and fonts.

Learn more:

- Showing Data for a Single Symbol or Multiple Symbols in Time and Sales on page 117
- Showing and Hiding Views on page 117
- Adding and Removing Symbols in Time and Sales on page 118
- Assigning Colors to Individual Symbols on page 119
- Adding and Removing Columns in the Time and Sales View on page 120
- Displaying Chain Symbols in Time and Sales on page 124

Each row in the price page view shows a symbol

The price page view shows all symbols that are visible in the time and sales document. This allows you to easily switch between the symbols, if you have chosen to only see time and sales data for the selected symbol. Like in a normal price page, you can insert and rearrange columns, change the update style of a column and customize font, colors and grid lines. You can also link other documents like charts to the price page view of time and sales.

Learn more:

- Customizing the Price Page View on page 123
- Linking Documents to Time and Sales on page 124

Each row in the time and sales view shows a trade or order

The rows of the time and sales view either show an order that was placed or a trade that was done. For trades, the last price and the volume of the trade is displayed, for orders the Bid or Ask price and the size of the order is shown.

The data shown for each trade or order is organized in columns. You can change the appearance and color of the grid lines, the font and color of the text and the background color of time and sales.

Learn more:

- Changing the Grid Style, Font and Colors of the Time and Sales View on page 120

Change the data displayed

By default, the time and sales document is updated every time a new order or trade is entered for the symbol. However, you can also use it to display historical data from a specific period of time. Additionally, a filter lets you define price and/or volume ranges.

Learn more:

- Changing the Amount of Data Displayed in Time and Sales on page 122
- Filtering Information in Time and Sales on page 123

Get notifications when prices change

To get an automatic notification (sound, message or e-mail) when the price of a symbol reaches a certain level, use price alerts.

Learn more:

- Price Alerts on page 321

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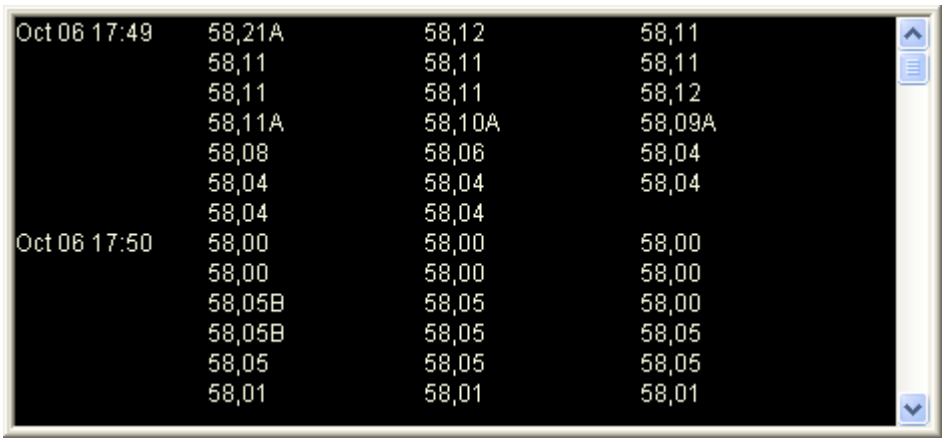
Alternative template: Time and Sales US

An alternative, US-style standard template is available for time and sales documents. It shows the data in a more condensed way.



Oct 06 17:49	58,21A	58,12	58,11
	58,11	58,11	58,11
	58,11	58,11	58,12
	58,11A	58,10A	58,09A
	58,08	58,06	58,04
	58,04	58,04	58,04
	58,04	58,04	
Oct 06 17:50	58,00	58,00	58,00
	58,00	58,00	58,00
	58,05B	58,05	58,00
	58,05B	58,05	58,05
	58,05	58,05	58,05
	58,01	58,01	58,01

Note The possibilities to customize US-style time and sales documents are restricted. You can change the amount of data displayed and change the font and colors of the time and sales document.

Watch List

Watch list documents are very similar to price pages. They show an overview of several symbols in a table. In addition to the functionalities of a price page, watch lists also offer basic portfolio functionalities.

Name	Last	Change%	Amount	Buy Date	Buy Price	Multiplier	Total P/L	P/L	P/LPerc	Asset Value
FLUGHAFEN WIEN AG	31,00	+6,90%	50,0000	25.01.1999	34,8500	1,0000	-192,50	-3,85	-11,05	1550,00
PALFINGER AG	10,53	+6,58%	100,0000	03.02.2000	5,6500	1,0000	488,00	4,88	86,37	1053,00
INTERCELL AG	21,59	+19,88%	50,0000	09.12.2005	8,5400	1,0000	652,50	13,05	152,81	1079,50
VOESTALPINE AG	23,94	+30,11%	100,0000	31.01.2006	24,2500	1,0000	-31,00	-0,31	-1,28	2394,00
Total							917,00			6076,50

Price page with additional functionality

A watch list consists of a part that works like a normal price page. You can add, remove and customize columns just like on a normal price page. In addition, each watch list shows eight additional columns after the price page columns. The first four columns you have to fill yourself when you add a symbol to your portfolio, the other four columns are calculated automatically.

Learn more:

Customizing Watch Lists on page 132

Simulate your portfolio in real-time

For each symbol in your portfolio, enter the date when you bought the security, the price you paid, the amount you bought and optionally also a multiplier (for example for Forex adjustments or derivative contracts). The value of your asset and profit / loss calculations for your portfolio are calculated automatically by the watch list, based on the current quotes at the exchange.

Learn more:

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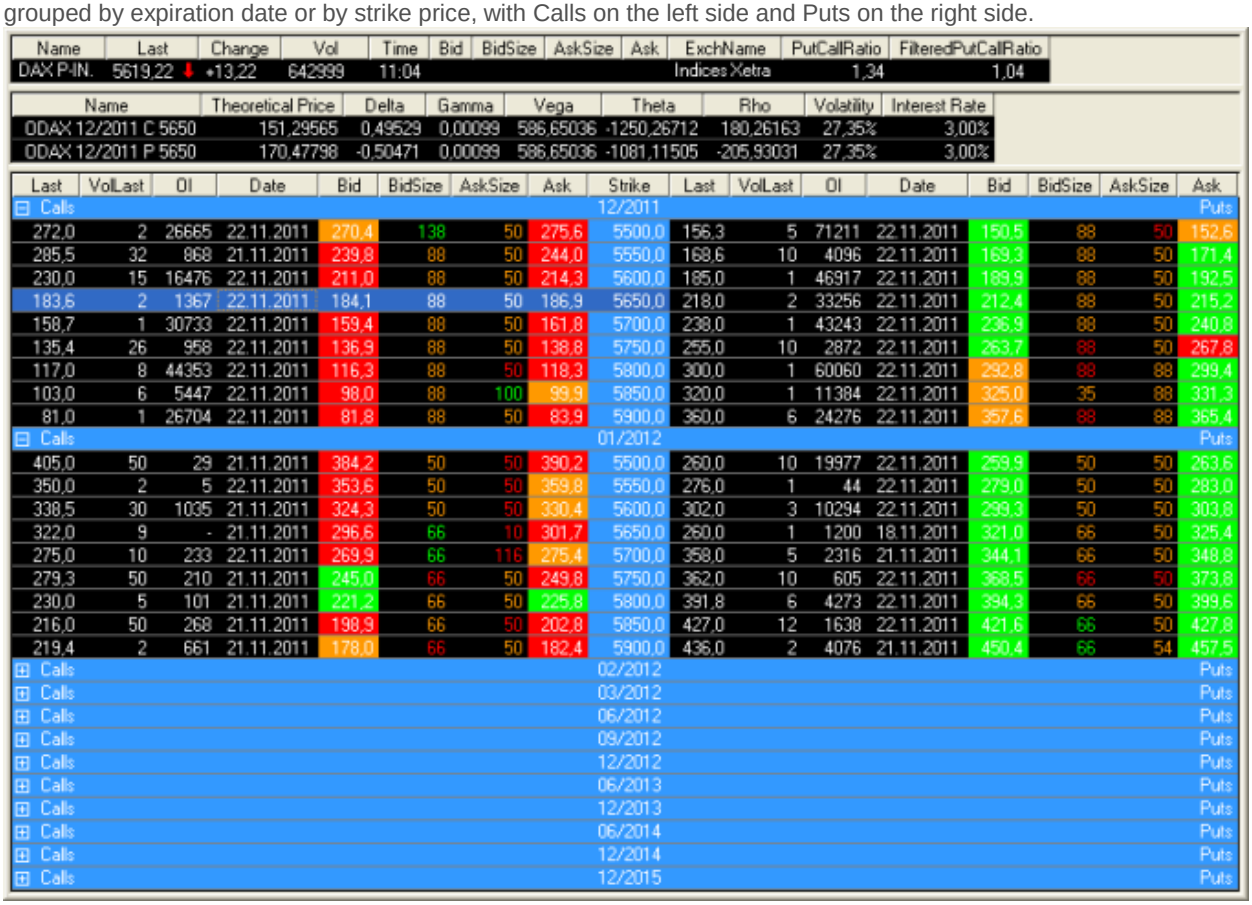
Entering Amounts, Buy Dates and Prices in a Watch List on page 134

Options Matrix

The options matrix shows all options for an underlying symbol (for example a stock, index or future). The options are grouped by expiration date or by strike price, with Calls on the left side and Puts on the right side.



Name	Last	Change	Vol	Time	Bid	BidSize	AskSize	Ask	ExchName	PutCallRatio	FilteredPutCallRatio
DAX P-IN.	5619,22	+13,22	642999	11:04					Indices Xetra	1,34	1,04

Name	Theoretical Price	Delta	Gamma	Vega	Theta	Rho	Volatility	Interest Rate
ODAX 12/2011 C 5650	151,29565	0,49529	0,00099	586,65036	-1250,26712	180,26163	27,35%	3,00%
ODAX 12/2011 P 5650	170,47798	-0,50471	0,00099	586,65036	-1081,11505	-205,93031	27,35%	3,00%

Last	VolLast	OI	Date	Bid	BidSize	AskSize	Ask	Strike	Last	VolLast	OI	Date	Bid	BidSize	AskSize	Ask
Calls								12/2011								Puts
272,0	2	26665	22.11.2011	270,4	138	50	275,6	5500,0	156,3	5	71211	22.11.2011	150,5	88	50	152,6
285,5	32	868	21.11.2011	239,8	88	50	244,0	5550,0	168,6	10	4096	22.11.2011	169,3	88	50	171,4
230,0	15	16476	22.11.2011	211,0	88	50	214,3	5600,0	185,0	1	46917	22.11.2011	189,9	88	50	192,5
183,6	2	1367	22.11.2011	184,1	88	50	186,9	5650,0	218,0	2	33256	22.11.2011	212,4	88	50	215,2
158,7	1	30733	22.11.2011	159,4	88	50	161,8	5700,0	238,0	1	43243	22.11.2011	236,9	88	50	240,8
135,4	26	958	22.11.2011	136,9	88	50	138,8	5750,0	255,0	10	2872	22.11.2011	263,7	88	50	267,8
117,0	8	44353	22.11.2011	116,3	88	50	118,3	5800,0	300,0	1	60060	22.11.2011	292,8	88	88	299,4
103,0	6	5447	22.11.2011	98,0	88	100	99,9	5850,0	320,0	1	11384	22.11.2011	325,0	35	88	331,3
81,0	1	26704	22.11.2011	81,8	88	50	83,9	5900,0	360,0	6	24276	22.11.2011	357,6	88	88	365,4
Calls								01/2012								Puts
405,0	50	29	21.11.2011	384,2	50	50	390,2	5500,0	260,0	10	19977	22.11.2011	259,9	50	50	263,6
350,0	2	5	22.11.2011	353,6	50	50	359,8	5550,0	276,0	1	44	22.11.2011	279,0	50	50	283,0
338,5	30	1035	21.11.2011	324,3	50	50	330,4	5600,0	302,0	3	10294	22.11.2011	299,3	50	50	303,8
322,0	9	-	21.11.2011	296,6	66	10	301,7	5650,0	260,0	1	1200	18.11.2011	321,0	66	50	325,4
275,0	10	233	22.11.2011	269,9	66	116	275,4	5700,0	358,0	5	2316	21.11.2011	344,1	66	50	348,8
279,3	50	210	21.11.2011	245,0	66	50	249,8	5750,0	362,0	10	605	22.11.2011	368,5	66	50	373,8
230,0	5	101	21.11.2011	221,2	66	50	225,8	5800,0	391,8	6	4273	22.11.2011	394,3	66	50	399,6
216,0	50	268	21.11.2011	198,9	66	50	202,8	5850,0	427,0	12	1638	22.11.2011	421,6	66	50	427,8
219,4	2	661	21.11.2011	178,0	66	50	182,4	5900,0	436,0	2	4076	21.11.2011	450,4	66	54	457,5
Calls								02/2012								Puts
Calls								03/2012								Puts
Calls								06/2012								Puts
Calls								09/2012								Puts
Calls								12/2012								Puts
Calls								06/2013								Puts
Calls								12/2013								Puts
Calls								06/2014								Puts
Calls								12/2014								Puts
Calls								12/2015								Puts

Note

Currently the options matrix is only available for options traded on Eurex.
When you try to open an options matrix for an underlying symbol for which more than one options product is traded on Eurex (e.g. the BASF stock), you can choose the appropriate options in a dialog (e.g. *BASF Options* or *BASF European Options*). To remember your choice, select the option **Always use this product** in the dialog. If you want to see the dialog again later, press and hold the SHIFT key while trying to open an options matrix for this underlying.
You can also easily open a price page with options symbols / underlyings by using the command **Related Symbols**. See Opening Related Symbols in a Price Page on page 71.

Underlying view and options matrix view

Information about the underlying symbol is shown on top. Below, the options for this symbol are displayed: Calls on the left and Puts on the right. The column layout in the options matrix view can be mirrored or identical on both sides. You can also change the number of decimal places that is shown for both the underlying and its options.

Learn more:

Showing, Hiding and Changing Views on page 127
Changing the Number of Decimal Places on page 128
Customizing the Underlying View on page 129
Customizing the Options Matrix View on page 131

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Options organized into groups

The options are grouped by their expiration date or by their strike price. Grouping by expiration date is the default setting – in that case, the middle column (shown in the same color as the group headers) displays the available strike prices for the chosen expiration date. The group containing the front month options is expanded automatically – other groups can be expanded or collapsed by double-clicking their group header.

Learn more:

Showing, Hiding and Changing Views on page 127

Greeks, Put/Call Ratio and filtered Put/Call Ratio

You can show both the so-called "Greeks" and the Put/Call Ratio in the options matrix document. The Greeks (Theoretical Value, Delta, Gamma, Vega, Theta, Rho) for the highlighted options contracts are shown in a separate Greeks view. The current Put/Call Ratio of all options for an underlying is shown as an additional column in the underlying view of the options matrix. You can also add a column showing the filtered Put/Call Ratio there – this ratio is calculated only from the data that is currently visible in the options matrix (taking into account all expanded groups and filter settings).

Learn more:

Showing Greeks and the Put/Call Ratio on page 129
Customizing the Greeks View on page 130

Filter by expiration date or strike price

You can choose which expiration dates and strike prices should be visible in the options matrix view.

Learn more:

Filtering Information in the Options Matrix on page 128

Get notifications when prices change

To get an automatic notification (sound, message or e-mail) when the price of an option reaches a certain level, use price alerts.

Learn more:

Price Alerts

Profile

TeleTrader maintains an extensive database of fundamental data, covering over 1.500 companies, including all large listed companies. You can access detailed company profiles including a company calendar, performance data and sector comparison information, fundamental values and multi-year balance data.

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Use the Professional icon to open documents (chart, market depth, time and sales) from the profile and easily show arbitrage lists or sector comparison price pages. Click the icon to show the symbol's PDF factsheet.

Learn more:

Displaying Company Profiles for a Symbol on page 69

Analyzer

TeleTrader Analyzer evaluates the most important stock analyses of banks, brokers and other institutions with statistical methods and graphically illustrates them on the screen. It shows the prevailing trend of analyst recommendations in a graphical overview. The assumed potential (price target) of the stock is directly plotted on a chart; buy / sell / hold recommendations are visualized in a "tachometer".

By clicking on the Analyzer chart in the web watch window, you can open a chart document in Professional that shows the channel of price targets as an additional symbol.

Note The Analyzer is not available in all data packages. Contact the support team if you are interested – see Customer Support on page 534.

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Learn more:

Displaying Analyst Recommendations for a Symbol on page 70

Web Watch

A web watch document is an embedded browser window that can display any Internet web page, just like you would with your normal Internet browser. As the browser window is embedded in TeleTrader Professional, it can be positioned on a virtual page, saved in a workspace etc. just like any other Professional document.

To open a new web watch browser window

You can open a new web watch browser window, just like you would open any Professional document, with **File > New Document**.

See Opening Symbols in New Documents on page 64 for details.

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History of visited links

All links that you visit while a web watch window is open are automatically stored in a history of visited links. You can access and edit this history if needed.

Learn more:

Managing Visited Links on page 135

Browser navigation bar

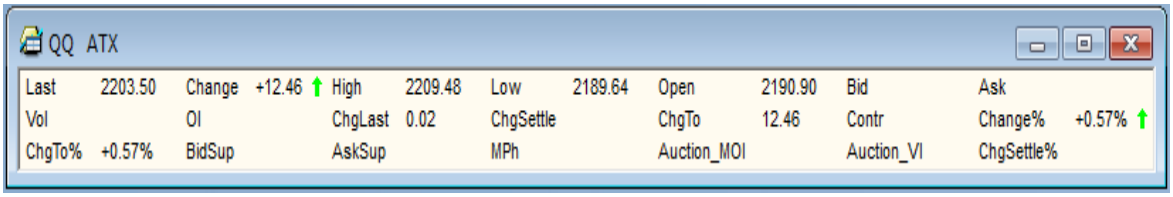
At the top of each web watch window, a navigation bar gives you access to the basic functions of a web browser, such as going back to the previous page, searching and reloading the current page, etc.

Learn more:

Navigating Between Web Pages on page 136

Quick Quote

Quick Quote shows the current price activity for one specific symbol. Quick Quote displays only data from one symbol. The data displayed depends on the symbol type, that means for stocks other data is shown than for futures. You can customize the data shown in Quick Quote as well as its font, colors, orientation and update style. You can also show Market Depth data in the Quick Quote document.


QQ ATX
Last 2203.50 Change +12.46 High 2209.48 Low 2189.64 Open 2190.90 Bid Ask
Vol OI ChgLast 0.02 ChgSettle ChgTo 12.46 Contr Change% +0.57%
ChgTo% +0.57% BidSup AskSup MPh Auction_MOI Auction_VI ChgSettle%

Learn more:

Changing the Fields, Update Style, Font and Colors of Quick Quote on page 136
Quick Quote Settings on page 346

Ticker

The ticker pane displays the last price and change for several symbols, similar to the tickers known from stock exchanges or TV screens. The symbols in the live ticker are scrolled continuously in one direction. You can add symbols to the ticker and remove them again, change how symbols are displayed in the ticker, and adapt the font and colors used in the ticker.

Learn more:

Displaying Symbols in the Ticker on page 72
Changing the Data Displayed in the Ticker on page 138
Changing Speed and Direction of the Ticker on page 138
Changing Font and Colors of the Ticker on page 139
Filtering Information in the Ticker on page 139

Opening Symbols

To display a symbol, you first have to open it in a document. You can do this in several ways:

- Use the QuickBar, which holds the most popular symbols: See Opening Symbols from the QuickBar on page 31

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- Use Symbol Search to find and open a specific symbol: See Opening Symbols from the Search Results on page 38
- Create a new empty document and insert one or more symbols there: See Opening Symbols in New Documents on page 64
- Take a symbol that is already displayed in a document and open it in another document: See Opening Symbols from Existing Documents on page 66
- Create a new document with default symbol / template from main window or any document: See Opening Symbols using Keyword Commands on page 67.
- Open a symbol that was stored in FastLook: See Opening Symbols from FastLook on page 167

If you want to display a symbol in the live ticker, see Displaying Symbols in the Ticker on page 72.

Opening Symbols in New Documents

When you open a symbol in a new document, you first choose which document type you want to display, and then add one or more symbols with the Symbol Search dialog. For example, you could create a new chart document and add the DAX symbol to it.

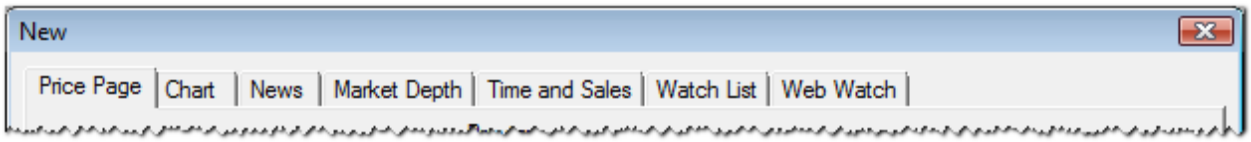
Note The Symbol Search dialog will not show up for news and web watch documents, as those don't show quote data.

To open a symbol in a new document

- On the **File** menu, click **New Document**.

Note You can also click on the **New Document** icon in the **Main** toolbar:

- In the **New Document** dialog, choose the document type by clicking on the corresponding tab.



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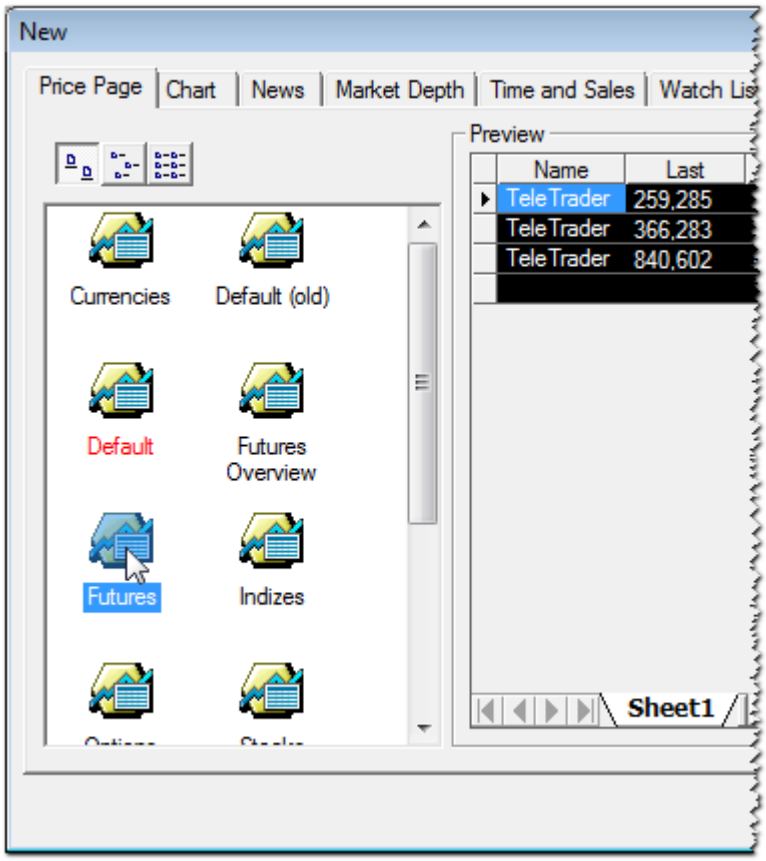
- In the **Template** pane on the left side, click on the template that you want to use. You can see a preview of the template in the **Preview** pane on the right side.



Note The default template (red label) is preselected. You can change the default template: See Organizing Templates on page 147.

- Click **OK**. The **Symbol Search** dialog is displayed.
- Enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol(s) that you want to open with the new document.
- Click **OK**. The new document is formatted with the chosen template.

To open a symbol in a new document from the toolbar

- Click on the arrow of the **New Document** icon in the **Main** toolbar.

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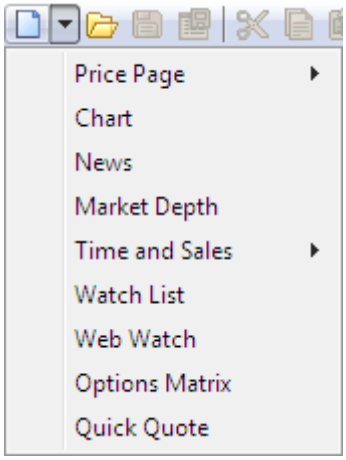
- Choose a document type from the list.



- In the **Symbol Search** dialog, enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol(s) that you want to open.
- Click **OK**. The new document is formatted with the default template.

> **Note** For time and sales documents and price pages, there are additional standard templates. See Price Page on page 48 and Time and Sales on page 56.

Opening Symbols from Existing Documents

When a symbol is already shown on the screen inside a document, you can display the symbol in a different document type. For example, you can open a market depth document for each symbol displayed in a price page.

To open a symbol with the default document type

- In a price page, chart, market depth, time and sales, options matrix, quick quote or watch list document, double-click on the symbol.

> **Note** In *market depth* and *quick quote* documents, you can double-click anywhere in the document. In *price pages*, *watch lists*, *options matrix* and *time and sales* documents, you have to double-click on the row of the symbol that you want to open. In *charts*, you have to double-click the time series (bars, candles or other data points) of the symbol.

- A new document is opened for the symbol. The document is formatted with the default template.

Double-click in…	Opens…
Price Page	Chart
Chart	Time and Sales
Market Depth	Chart
Time and Sales	Chart
Options Matrix	Chart
Watch List	Chart

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Note You can change the default document that is opened. See Double-Click Actions Settings on page 346.

To open a symbol with other document types

- In a price page, chart, market depth, time and sales, options matrix, quick quote or watch list document, right-click on the symbol and choose **Open**.

Note In *market depth* and *quick quote* documents, you can right-click anywhere in the document. In *price pages*, *watch lists*, *options matrix* and *time and sales* documents, you have to right-click on the row of the symbol that you want to open. In *charts*, you have to right-click the time series (bars, candles or other data points) of the symbol.

- Choose the document type from the list.
- A new document is opened for the symbol. The document is formatted with the default template.

Note From price pages, watch lists, options matrices and the price page view of time and sales documents, you can open separate documents for more than one symbol simultaneously. Select the symbols by clicking on them while keeping the CTRL key pressed (see Selecting Rows or Columns of a Price Page on page 89), then follow the steps above.
If you select several symbols, and open a new price page, watch list or time and sales document for them, by default all symbols will be combined in one document. If you keep the CTRL key pressed while choosing the document type, each symbol will be opened in a separate document.
If you open a new chart document while selecting several symbols, holding the CTRL key will open overlaid symbols in one chart pane. To open every symbol in its own chart pane, hold both the CTRL + SHIFT while choosing the document type **Charts**.

To open a symbol using a template

- In a price page, chart, market depth, time and sales, options matrix, quick quote or watch list document, right-click on the symbol and choose **Open**.
- Right-click the document type you want to use (or move the mouse pointer to the document type and wait for a moment) – an additional menu will appear to the right.
- Choose a template from the list.
- A new document is opened for the symbol. The document is formatted with the chosen template.

Opening Symbols using Keyword Commands

Besides opening symbols from the QuickBar, search results, or from existing documents, you can also open them from the Professional main window or in a different document type by using **keyword commands**. For example, you can open a market depth document for a default symbol (DAX) by typing the following command: **.MD** over the Professional main window area and then pressing the ENTER key. Every document is opened with its default template.

Keyword commands are typed commands that are entered in the same way as chartable expressions. They are used for easier manipulation of documents. Each keyword command can be entered either as a full keyword, or by typing the appropriate keyword abbreviation. For example: To open a news document with the default template, you can type **.NEWS** or **.NE** and press the ENTER key.

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Note When entering keyword commands, you have to enter the minimum number of characters required for that specific command to be executed. For example, in order to excecute the **NEWS** command, you can type any number of characters from the minimum up to the whole command: **.NE**, **.NEW**, or **.NEWS**.

Keyword commands – important characteristics

- Keyword commands are not case sensitive. This means that keyword commands can be typed as **.NEWS** or **.news.**
- All keyword commands must start with a point. Typing just **NEWS** without the point instead of **.NEWS** will not execute the command.

To open a price page document from the Professional main window - using keyword command

- In the Professional main window, just type the keyword abbreviation, for example **.PP**.
- Price page documenbol (default symbol) and is formatted using the default template.

To open a market depth document from another document - using keyword command

- In price page document, click in the row of the desired symbol.
- Type the keyword abbreviation, for example **.MD**.
- Market depth document opens for the selected symbol and is formatted using the default template.

List of keyword commands:

Keyword command	Minimal command abbreviation	Action taken
.PP	**.PP**	Opens the **Price Page** document
.VP	**.VP**	Opens the **Vertical Price Page** document
.WL	**.WL**	Opens the **Watch List** document
.CH	**.CH**	Opens the **Chart** document
.MD	**.MD**	Opens the **Market Depth** document
.TS or **.T&S**	**.TS** or **.T&S**	Opens the **Time & Sales** document
.QQ	**.QQ**	Opens the **Quick Quote** document
.NEWS	**.NE**	Opens the **News** document with the default template.

Note If you enter keyword commands over a detached document, newly opened document will also be detached.

Displaying News for a Symbol

For each symbol that is shown in a document, in the Symbol Search results or in FastLook, you can call up related news stories in a separate document. If you want to see an overview of all current news stories, use the QuickBar or open a default news document from the **File** menu.

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To show related news for a symbol

There are several ways to show a news document with relevant news for a symbol:

- Find the symbol with Symbol Search and open a document showing related news with the **Open** button: Opening Symbols from the Search Results on page 38.
- Right-click on a symbol that is already displayed in a document and open related news with **Open > Search News**: Opening Symbols from Existing Documents on page 66.
- Right-click on a symbol that was stored in FastLook and open related news with **Open > Search News**: Opening Symbols from FastLook on page 167.

> **Note** The ISIN of a symbol is used to search for relevant news stories. If the chosen security does not have an ISIN, or the news service does not support ISIN search, this feature will not work.

To show a current news overview

There are several ways to show a news overview:

- Click on the icon **News** in the QuickBar:

- Create a news overview document with **File > New Document**: See Opening Symbols in New Documents on page 64.

To show the latest headline for a symbol in a price page

See Adding, Removing and Customizing the News Flash Columns on page 100.

Displaying Company Profiles for a Symbol

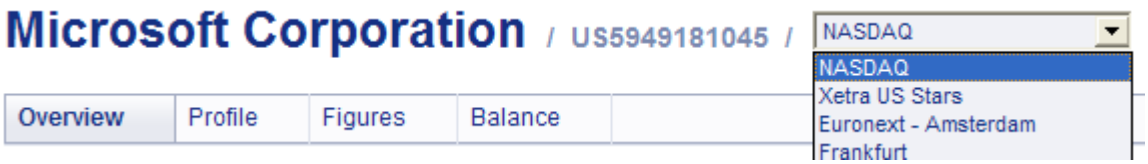
You can call up the profile for a company directly from the symbol that is displayed in a document. This works similar to opening the symbol in a new document.

To request a company profile for a specific symbol

- Find the symbol in the QuickBar and open it with the document type **Profile**: See Opening Symbols from the QuickBar on page 31
- Find the symbol with Symbol Search and open its profile with the **Open** button: See Opening Symbols from the Search Results on page 38
- Right-click on a symbol that is already displayed in a document and open its profile with **Open > Profile**: See Opening Symbols from Existing Documents on page 66
- Right-click on a symbol that was stored in FastLook and open its profile with **Open > Profile**: See Opening Symbols from FastLook on page 167

To switch the market of the displayed symbol

- Click the market's name on top of the profile and choose another market from the list.



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To open a Professional document from the profile

- Click the Professional icon and choose **Price page**, **Chart**, **Market Depth** or **Time & Sales** to open the symbol in a Professional document.
- On the **Overview** page, click the icon in the **Markets** section to open an arbitrage list for the symbol, or click the same icon in the **Sector comparison** section to open a price page with other companies in the same sector.

To open a PDF factsheet for the symbol

- Click the icon to open a PDF factsheet for the symbol.

Displaying Analyst Recommendations for a Symbol

You can call up a web watch window with analyst recommendations (Analyzer) directly from the symbol that is displayed in a document. This works similar to opening the symbol in a new document.

From the Analyzer document, you can open a Professional chart showing the price targets for a stock as a channel.

> **Note** The Analyzer is not available in all data packages. Contact the support team if you are interested – see Customer Support on page 534.

To request analyst recommendations for a specific symbol

- Find the symbol in the QuickBar and open it with the document type **Analyzer**: See Opening Symbols from the QuickBar on page 31
- Find the symbol with Symbol Search and open the Analyzer with the **Open** button: See Opening Symbols from the Search Results on page 38
- Right-click on a symbol that is already displayed in a document and open the Analyzer with **Open > Analyzer**: See Opening Symbols from Existing Documents on page 66
- Right-click on a symbol that was stored in FastLook and open the Analyzer with **Open > Analyzer**: See Opening Symbols from FastLook on page 167

To open a chart with price targets from the Analyzer

- Click on the chart that is shown in the Analyzer window.

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- A Professional chart document opens that shows the symbol of the security and an additional symbol with the analyst recommendations.

Opening Related Symbols in a Price Page

For each symbol that is shown in a document, you can also search for related symbols and display them in a price page. A related symbol usually has the same ISIN as the original symbol, and may have the same or a different symbol type; it may also be related hierarchically (for example, options for a stock / underlying for an option contract or index chain for a stock).

When you are looking at a news story where an ISIN is mentioned, you can also open a list of related symbols by clicking on it.

To open a list of related symbols

- In a price page, chart, market depth, time and sales, options matrix, quick quote or watch list document, right-click on a symbol and choose **Related Symbols**.
- Choose from the list which symbols should be shown:

<Name of related chain>	For some symbols, you can open a related chain symbol. For example, if a stock is part of an index, you can open the appropriate index chain in a price page.
Arbitrage List	Shows all symbols that have the same ISIN and symbol type (such as stock, future etc.) as the original symbol in a price page. The list is sorted by exchange – you can customize the order of exchanges under **Tools > Options > Price Page > Arbitrage Lists** (see Aribtrage List Settings on page 345).
Same ISIN	Shows all symbols that have the same ISIN in a price page. This could also include other symbol types than that of the original symbol.
Symbol Search	Opens the Symbol Search dialog with the ISIN of the original symbol as the search term, and its symbol type preselected in the search settings.
All Options	Shows all Eurex options related to the original symbol in a price page.
Put Options	Shows the Eurex Put options related to the original symbol in a price page.

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Call Options	Shows the Eurex Call options related to the original symbol in a price page.
Underlying	Shows an arbitrage list of the underlying symbol for a Eurex options contract in a price page.

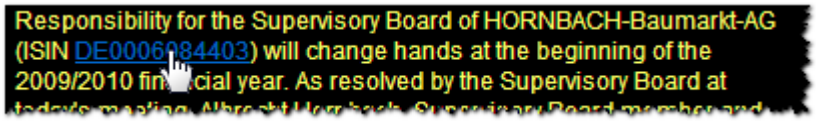
- A price page containing the list of related symbols will be opened. The price page is formatted with the default template.

To open a list of related symbols using a template

- In a price page, chart, market depth, time and sales, options matrix, quick quote or watch list document, right-click on a symbol and choose **Related Symbols**.
- Right-click the symbol list you want to use (or move the mouse pointer to the symbol list and wait for a moment) – an additional menu will appear to the right.
- Choose a template from the list.
- A price page containing the list of related symbols will be opened. The price page is formatted with the chosen template.

To open a list of related symbols from a news story

- In a news story, click on an highlighted ISIN to open a price page with an arbitrage list of related symbols.


Responsibility for the Supervisory Board of HORNBACH-Baumarkt-AG
(ISIN DE0006084403) will change hands at the beginning of the
2009/2010 fin cial year. As resolved by the Supervisory Board at

Displaying Symbols in the Ticker

The ticker is a pane inside the Professional main window. When you add symbols to it, Professional will automatically store them and display these symbols each time you show the ticker pane.

To display the ticker pane

- On the **View** menu, click **Ticker**.
- By default, the ticker pane is empty. You have to add symbols to it.

To add a symbol to the ticker

- Right-click on the ticker pane and choose **Insert Symbols**.
- The **Symbol Search** dialog is displayed.
- Enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol(s) that you want to add to the ticker.
- Click **OK**.

> **Note** You can also add symbols with drag and drop (see Copying Symbols on page 75) or in the **Ticker Symbols** dialog (see below).

To remove a symbol from the ticker

- Right-click on the ticker pane and choose **Edit Symbols**.

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- In the **Ticker Symbols** dialog, select the symbol that you want to remove.
- Click **Delete**.
- Click **OK**.

> **Note** You can also add symbols in the **Ticker Symbols** dialog: Click **Add** and choose the symbol(s) from the **Symbol Search** dialog.

Changing, Inserting and Removing Symbols

In each document and also in the ticker pane, you can change a symbol that is displayed in the document. In documents which can show more than one symbol (price pages, watch lists, time and sales and charts), you can also insert and remove symbols.

Changing Symbols

You can change a symbol in one document or in all open documents at once. You can also change a symbol stored in FastLook with this method.

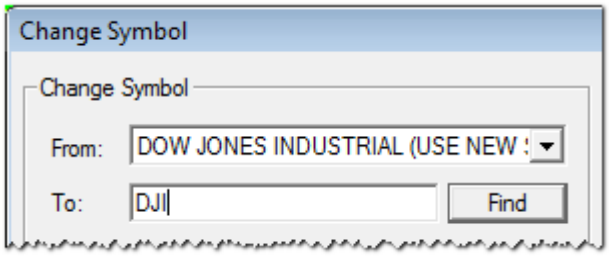
> **Note** Sometimes the exchanges assign a different name to a symbol. When this happens, you will be notified by the support team to use the new symbol. You can use the steps described below to change the symbol in all open documents at once.

To change a symbol

- In a price page, chart, market depth, time and sales, options matrix, quick quote or watch list document, select a symbol.
- On the **Tools** menu, click **Change Symbol**.
- In the **Change Symbol** dialog, the symbol that will be replaced is displayed in the **From** field.

> **Note** If you want to change another symbol, you can choose it from the **From** list.

- In the **To** field, enter a search term and click **Find**.



- In the **Symbol Search** dialog, select the new symbol and click **OK**.
- Set the document options:
  - **Active document**: The symbol is changed only in the document where you selected the symbol.

> **Note** You can also replace the symbol in the active document by just overwriting it with a new symbol – see Calling Symbol Search from a Document on page 41.

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- **Selected documents**: The symbol is changed in open documents, windows and panes of a specific type. Select the types that you want to include in the change.

- Set the **Virtual Pages** options:
  - **Active Page**: The symbol is only changed in the Virtual Page that you currently see on the screen.
  - **All Pages**: The symbol is changed in all Virtual Pages of your workspace.
- Click **OK** to change the old symbol to the new symbol.

> **Note** Chain symbols (pointer to a list of symbols) can only be changed to other chain symbols. Also, symbols that are part of a chain that is displayed in a price page or time and sales document will not be affected by a global change. See also Displaying Chain Symbols in a Price Page on page 101and Displaying Chain Symbols in Time and Sales on page 124.

Converting Futures to Forward Contracts

You can convert any futures symbol to a so-called forward contract. A forward contract will always show the appropriate "front month" contract, which means that it will never show an expired futures contract. As soon as the front month contract expires, it is automatically rolled over to the next available contract.

> **Note** **TeleTrader Professional** also offer *continuous contracts* and continuation charts, which allow you to chart a longer history of data for technical analysis by combining several futures contracts together (see Continuous Contracts / Continuation Charts on page 234). In price pages and other documents, continuous contracts behave similar to forward contracts, in that they automatically roll over to a newer contract. The difference between the two contract types is that forward contracts always roll over on expiration date, whereas continuous contracts can also roll over based on other trigger conditions, like volume or open interest.

To convert a futures symbol to a forward contract

- Right-click on the futures symbol and choose **Convert to Forward**.

> **Note** On the QuickBar, most symbols are already defined as forward contracts, which means that the command **Convert to Forward** is in most cases no longer available for symbols that are opened from the QuickBar (see Opening Symbols from the QuickBar on page 31).

Inserting Symbols

You can only insert additional symbols in documents that can display more than one symbol: Price pages, watch lists, charts, and time and sales documents.

To insert a symbol in a price page, watch list or time and sales document

- In a price page, watch list or time and sales document, right-click on the row where the symbol should be inserted and choose **Insert Symbols**.
- In the **Symbol Search** dialog, enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol(s) that you want to insert.
- Click **OK**. The symbol is inserted in the selected row, moving the following rows down.

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To insert a symbol in a chart

- In a chart document, right-click in the chart pane below which the symbol should be inserted and choose **Insert > Symbol**.
- In the **Symbol Search** dialog, enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol that you want to insert.
- Click **OK**. The symbol is inserted in a new pane below the selected chart pane.

To insert a symbol into the live ticker

See Displaying Symbols in the Ticker on page 72

Copying Symbols

Symbols can be copied among documents with drag and drop. In price pages, you can also create a copy of a symbol in the row beneath the current symbol.

To copy a symbol between documents with drag and drop

- Select the symbol that you want to copy:
  - In a *price page, watch list*, *options matrix* or the price page view of *time and sales*, select the symbol by clicking on its row header.
  - In a *chart*, select the symbol by clicking on the time series.
  - In the *Symbol Search* dialog, the *QuickBar* or *FastLook*, select the symbol by clicking on it.
- Hold the mouse button down and move the symbol. The mouse pointer changes:

  Dragging a symbol from a *price page*, *watch list, options matrix, time and sales* or *Symbol Search*

  Dragging a symbol from a *chart*

  Dragging a symbol from *FastLook*
- Drag the symbol to its new location and release the mouse button to drop it there. Depending on the target document or window where you drop the symbol, you can choose its exact location:

Target is…	To choose the location for the symbol…
Price Page	Drop the symbol in the row where you want to insert it.
Chart	Drop the symbol inside a chart pane to insert it as an overlay. Drop the symbol on a pane header to insert it in a separate chart pane. Drop the symbol on an existing time series to replace it with the new symbol (note that the pointer will lose the plus sign in this case).
Data Table	Drop the symbol on the column headers of the data table to insert it on an additional tab in the data table and as an overlay on the corresponding chart. Drop the symbol on the data table view of a chart to replace the current symbol in both the data table and the corresponding chart (note that the pointer will lose the plus sign in this case).
Market Depth	Drop the symbol anywhere to change the displayed symbol.
Time and Sales	Drop the symbol anywhere to add it to the symbol list.

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Options Matrix	Drop the symbol anywhere to change the underlying symbol.
Quick Quote	Drop the symbol anywhere to change the displayed symbol.
Watch List	Drop the symbol in the row where you want to insert it.
FastLook	Drop the symbol on the folder where you want to insert it.
Ticker	Drop the symbol anywhere to add it to the ticker.

To create a copy of a symbol in a price page

- In a price page, right-click on the symbol and choose **Insert Copy of Symbol**.
- In the row beneath the current symbol, an exact copy of the symbol is created. This can for example be useful for VWAP calculations with different time periods (see also Adding, Removing and Customizing the VWAP Columns on page 98).

Removing Symbols

You can only remove a symbol from documents that can display more than one symbol: Price pages, watch lists, charts, and time and sales documents. You can also delete symbols from the ticker.

In price pages, you can also delete a symbol, but keep the empty row in the tabular overview.

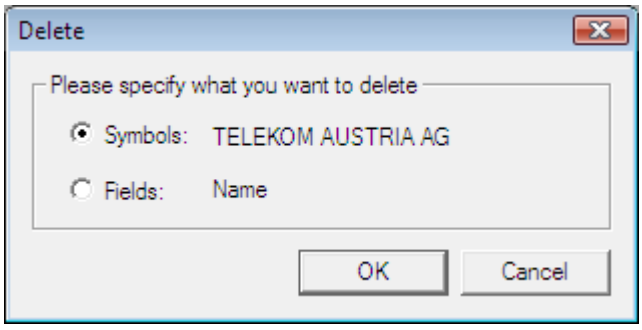
To remove a symbol from a price page, watch list, chart or time and sales document

Warning *This action cannot be undone.* This will remove the symbol from the chosen document.

- In a price page, watch list, chart or time and sales document, right-click on the symbol and choose **Delete** (in time and sales: **Remove Symbol**).

Note In *price pages*, *watch lists* and *time and sales* documents, you have to right-click on the row of the symbol that you want to remove. In *charts*, you have to right-click the time series (bars, candles or other data points) of the symbol.

- In price pages and watch lists, you might be asked whether you want to remove the symbol or the columns that you have marked. Choose the appropriate option and click **OK**.



- In charts, you can also use the **Format Objects** dialog to remove symbols: See Customizing Chart Objects on page 233.

To clear a row in a price page

- In a price page document, right-click on the symbol and choose **Clear**.
- The symbol is removed from the price page, the empty row remains.

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To remove a symbol from the live ticker

See Displaying Symbols in the Ticker on page 72

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Customizing Documents, Pop-up Windows and Panes

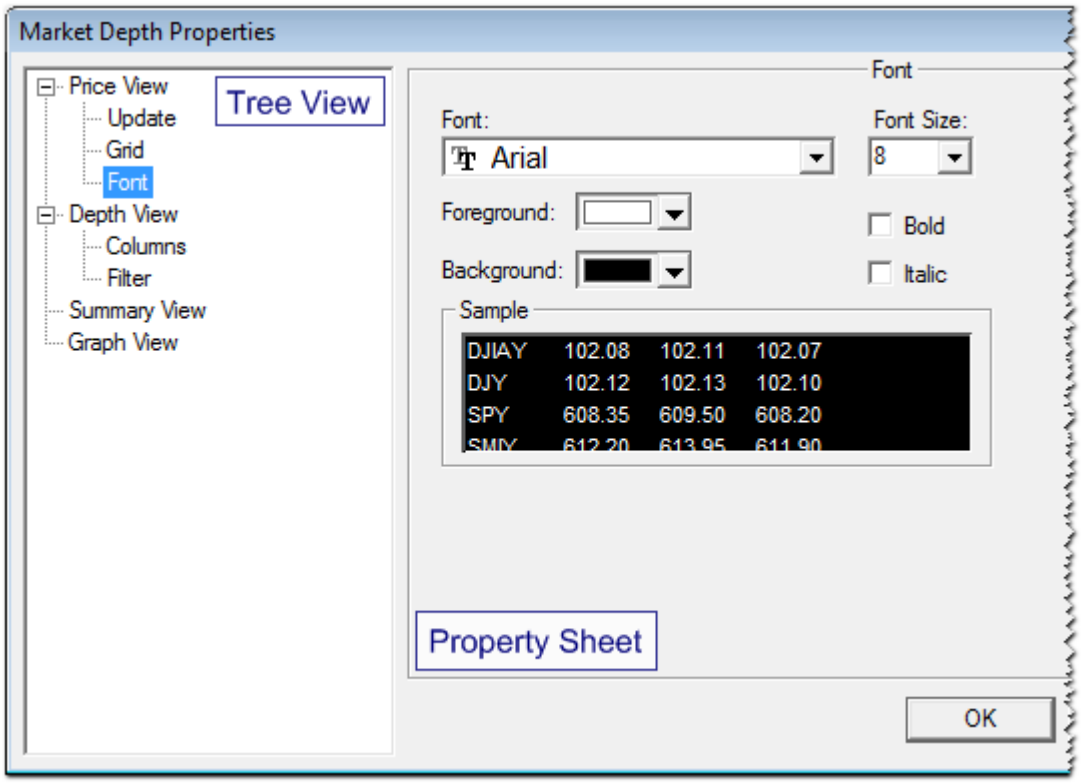
When you first open a document, or display a pop-up window or pane, it is shown with its default settings. You can change how a document, pop-up or pane looks, add or remove information and organize its content. You can also link many documents to a price page, watch list or time and sales document, so that you can display a symbol in multiple documents at once and easily switch between symbols from a central overview table.

Most settings can be adapted in the *properties dialog* of the document, pop-up or pane. Other settings can be accessed by right-clicking in the document and choosing a command from its *context menu*. Some manipulations, such as moving a column in a price page, can be made with simple *drag and drop* operations.

Properties dialog

The properties dialog allows you to adapt the default settings to your needs. To display the dialog, right-click in the document, window or pane that you want to customize and select **Properties**.

Properties dialogs are made up of several *property sheets*. Each property sheet contains several properties that are related to each other. For example, the **Font** property sheet allows you to change the font style, font size and font color for all text in a document. You can choose the property sheet in the left part of the dialog.



Note Some property sheets are arranged hierarchically and displayed in several groups. In this case, you will see a tree view on the left side of the dialog.

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Context menu

The context menu shows the commands that are most suited for the current situation. To display the context menu, right-click in the document, pop-up window or pane.

In some documents, the commands listed in the context menu depend on where in the document you click.

Where you right-click…	Commands you see…
Column headers of a price page	Insert, remove and freeze columns, sort rows
Row headers of a price page	Insert and remove symbols, headers and alerts, copy symbols with an RTD or DDE link
Symbols / cells of a price page	Additionally: Open symbols in other documents
Upper left corner of a price page	Auto-size the price page
Sheet tabs of a price page, chart or time and sales	Insert, remove and rename sheets
Chart background, header or scales	Insert symbols, alerts, studies and bookmarks, extend time line
Symbol / time series in a chart	Additionally: Open the symbol in other documents, remove or hide the symbol, link the symbol to a price page, report bad ticks
Content of a pane	Adapt the settings for the pane content
Borders of a pane	Hide / show the pane and change its docking behavior
Watch list columns	Enter and edit purchase data

Customizing Price Pages

For a price page, you can customize the following settings in the **Price Page Properties** dialog:

> **Note** Most of these settings are also available for Vertical Price Pages (only that rows and columns are reversed), with the following exceptions: No sorting functionalities, no headers and sheets, no VWAP / NewsFlash columns, no column freezing, no support for chain symbols.

Property Sheet	Description
Columns	Add, remove and rearrange the columns of a price page
Update	Assign an update style to specific columns
Grid	Change the appearance and color of the grid
Font	Change the font of the price page and its foreground and background color
Header	Change the foreground and background color of the headers
News Flash	Change the settings for the News Flash columns
Studies	Properties of each inserted study, such as its bases, parameters and style.
Loop Documents	Change the time interval between switching from one symbol to next symbol.

Additionally, you can resize rows and columns, insert, change and remove headers, add sheets, sort the rows of the price page and freeze one or more columns of a price page. You can also link other documents to a price page, so that you can display a symbol in multiple documents at once and easily switch between symbols from a central price page. Chain symbols (automatically updated symbol lists) can be displayed in a price page as well.

For more information, see Price Page on page 48.

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Adding and Removing Columns

You can add and remove columns on the **Columns** property sheet of the **Price Page Properties** dialog, or directly in the price page by right-clicking on the column header.

To add columns to a price page

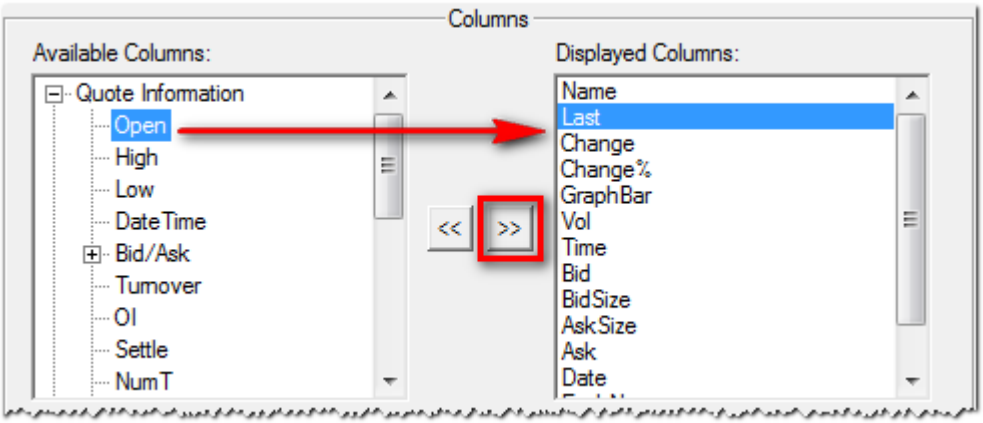
- Right-click in the price page and choose **Properties**.

> **Note** You can also right-click on a column header in the price page and choose **Insert**.

- In the **Price Page Properties** dialog, click **Columns**.
- From the **Displayed Columns** list, choose the column after which the new column should appear.
- Choose the column that you want to add from the **Available Columns** list.

> **Note** To search for a specific column, type its name into the **Filter** field below the list.

- Click the **>>** button.



- The chosen column is now moved to the **Displayed Columns** list.

To remove columns from a price page

- Right-click in the price page and select **Properties**.
- On the left side of the dialog, select **Columns**.
- On the right side of the dialog, select the column you want to remove from the **Displayed Columns** list.

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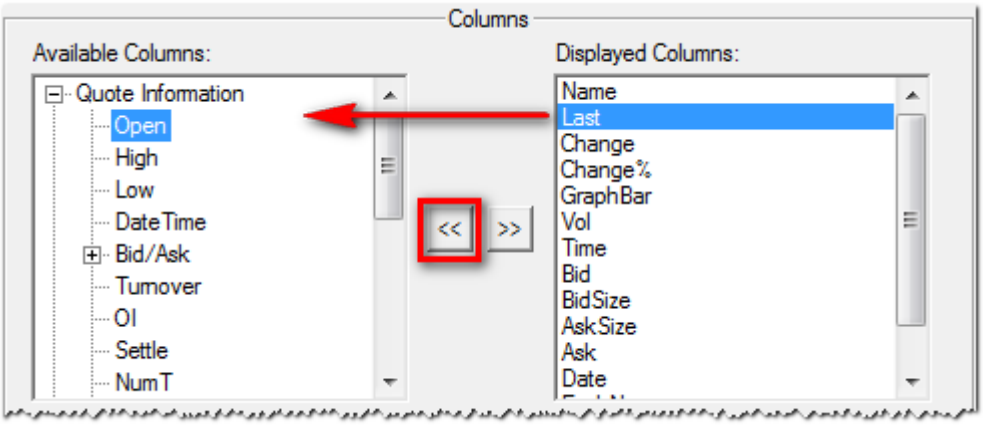
- Click the << button.



- The chosen column is now moved to the **Available Columns** list.

> **Note** You can also right-click on the column header and choose **Remove** to delete the column from the price page.

Groups in the Available Columns list

The **Available Columns** list is very long. Therefore, several groups have been created to make it easier to find a specific column. To choose a column from inside a group, you first have to expand the group by double-clicking on it.

If you prefer to see an alphabetic list of all columns, select the **List view** checkbox below the **Available Columns** list.

To search for a column, type its name into the **Filter** field below the list. The **Available Columns** list then only shows the columns matching that name.

You can see a short description of each column when you click on it.

Rearranging and Resizing Rows and Columns

You can rearrange columns on the **Columns** property sheet of the **Price Page Properties** dialog. Rows can only be rearranged with drag and drop. To resize rows and columns, drag the separator between the rows or columns.

To rearrange the columns of a price page

- Right-click in the price page and select **Properties**.
- On the left side of the dialog, select **Columns**.
- On the right side of the dialog, select a column in the **Displayed Columns** list.

> **Note** The columns in the **Displayed Columns** list are shown in the same order as they are shown in the price page.

- Click **Move Up** or **Move Down** to change the column's place in the list.

> **Note** You can also rearrange the columns of a document by clicking on the column header and dragging the column to its new position.

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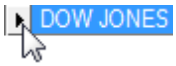
To rearrange the rows of a price page

- Click on the row header of the row.



- Hold the mouse button down and move the row. The mouse pointer changes:

- Drag the row to its new position and release the mouse button to drop it there.

To insert an empty row into a price page

- Right-click on the row where an empty row should be inserted and choose **Insert**.
- An empty row is inserted in the selected row, moving the following rows down.
- You can now for example add a symbol to the row: See Inserting Symbols on page 74.

> **Note** You can remove an empty row in the same way as you would remove a row that contains a symbol. See Removing Symbols on page 76.

To resize the width of a column or the height of a row

- Place the mouse pointer between two columns or rows. The mouse pointer changes:

- Hold the mouse button down and move the mouse to widen / shorten the column or row.

> **Note** You can change the height of several rows at once. Select the rows by clicking on them while keeping the CTRL key pressed, then follow the steps above.

Set Individual Color for Columns / Fields

You can change background color of each individual column of a Price Page (row of a Vertical Price Page). Background color change does not apply to: price page headers, update color background when new quotes arrive, VWAP button, News Flash button and News Headline if **Use News Flash properties for Headline column** is enabled.

To change the color of individual Price Page column / field

- Right-click in the price page and choose **Properties**.
- On the right side of the **Price Page Properties** dialog, select column / field from **Displayed Columns / fields** list.
- Select **Background color** option and choose desired color.

Name	Vol	Time	Bid	BidSize	AskSize	Ask	Date	ExchName	Ticker
ADIDAS AG NA O.N.	155324	12:07	68.75	378	115	68.77	2/12/2013	Xetra	ADS
ALLIANZ SE VNA O.N.	410882	12:07	103.30	1130	200	103.35	2/12/2013	Xetra	ALV
BASF SE NA O.N.	646181	12:07	71.87	186	799	71.89	2/12/2013	Xetra	BAS
BAY.MOTOREN WERKE AG ST	551213	12:06	72.03	646	244	72.07	2/12/2013	Xetra	BMW
BAYER AG NA	495114	12:07	70.76	457	638	70.78	2/12/2013	Xetra	BAYN
BEIERSDORF AG O.N.	107106	12:06	65.11	398	807	65.16	2/12/2013	Xetra	BEI
COMMERZBANK AG O.N.	13407844	12:07	1.503	8416	11482	1.504	2/12/2013	Xetra	CBK
CONTINENTAL AG O.N.	131130	12:06	87.33	497	20	87.38	2/12/2013	Xetra	CON
DAIMLER AG NA O.N.	1446241	12:07	44.455	100	1025	44.470	2/12/2013	Xetra	DAI
DEUTSCHE BANK AG NA O.N.	2793597	12:07	36.525	887	645	36.540	2/12/2013	Xetra	DBK

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Set Individual Number of Characters for Columns / Fields

For all text columns of a price page (or fields in a vertical price page), you can change the number of displayed characters for each individual column (e.g. **Name**, **Exchange**, **Ticker** etc.).

To change the number of characters for a price page column / field

- Right-click in the price page and choose **Properties**.
- On the right side of the **Price Page Properties** dialog, select a column / field from the **Displayed Columns / Fields** list.
- Select the option **Show the first X character(s)** and adapt the number of character(s) to your needs.

Name	Last	Change	Change%	GraphBar	Vol	Time	Bid	BidSize	AskSize	Ask	Date	ExchName	Ticker
ADID	78.81	+0.70	+0.90%		459650	11:30	78.80	784	900	78.82	3/22/2013	Xet	ADS
ALLI	108.85	-0.10	-0.09%		347420	11:30	108.80	4740	2111	108.90	3/22/2013	Xet	ALV
BASF	70.78	-0.52	-0.73%		1060676	11:30	70.76	438	602	70.79	3/22/2013	Xet	BAS
BAY.	69.74	+0.38	+0.55%		434289	11:30	69.73	137	434	69.76	3/22/2013	Xet	BMW
BAYE	78.08	-1.06	-1.34%		719295	11:29	78.05	515	1737	78.10	3/22/2013	Xet	BAYN
BEIE	71.05	+0.18	+0.25%		118618	11:30	71.05	149	359	71.09	3/22/2013	Xet	BEI
COMM	1.199	-0.006	-0.50%		10328508	11:30	1.199	7654	364070	1.200	3/22/2013	Xet	CBK
CONT	93.10	-0.07	-0.08%		177600	11:30	93.06	105	234	93.13	3/22/2013	Xet	CON
DAIM	44.230	+0.275	+0.63%		805059	11:29	44.200	304	38	44.215	3/22/2013	Xet	DAI
DEUT	32.460	-0.240	-0.73%		1476711	11:30	32.450	381	1729	32.465	3/22/2013	Xet	DBK
DEUT	48.925	-0.340	-0.69%		164315	11:29	48.905	368	126	48.930	3/22/2013	Xet	DB1

Changing the Number of Decimal Places

You can change the number of decimal places that is used for a specific column in price pages.

> **Note** To additionally show a thousands separator for large numbers (such as volume data), activate the option **Use thousands separator** under **Tools > Options > General** (see General Settings on page 339).

To change the number of decimal places for a price page column

- Right-click the column and choose **Set decimal places**.
- In the **Set decimal places** dialog, enter the number of decimal places that you want to use.
- Select **Column** to apply this setting only to the selected column, or select **Symbol** to apply it to the selected symbol.

> **Note** When selecting **Symbol**, the custom decimal places will be used for this symbol in all documents (charts, time and sales, market depth, options matrix, quick quote, price pages etc.). You can also change this setting under **Tools > Options > General > Subscription** (see Subscription Settings on page 339).

Changing the Update Style of a Column

You can change the update style of a column on the **Update** property sheet of the **Price Page Properties** dialog. The update style is a visual effect that is displayed whenever new quotes arrive, depending on whether for example the price moved up or down.

To change the update style for the columns of a price page

- Right-click in the price page and select **Properties**.
- On the left side of the dialog, select **Update**.

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- On the right side of the dialog, select a column from the **Columns** list.

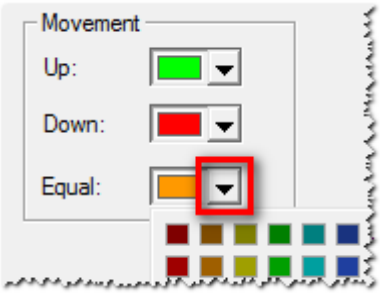
> **Note** Only the columns from this list can have an update style. You cannot add columns to this list.

- In the **Update Notify** section, select the update style that you want to use. The following styles are available:

	Arrow	A colored arrow is placed next to the content of each cell.
	Color text	The text of the cells will be colored on price movements.
	Color background	The background of the cell will be colored on price movements.

> **Note** You can combine the styles **Arrow** and **Color text**, but you cannot combine the style **Color background** with any of the other styles.

- In the **Movement** section, choose the color that will be used to signal price movements. You can choose different colors when the price moves up, down, or stays the same.



> **Note** You can assign a flash effect to the update style **Color background** with the option **Hide Price Page Notify after x seconds**. To change this setting, choose **Tools > Options > Price Page** from the menu bar. See Price Page Settings on page 344.

Changing the Grid Style

You can change the appearance and color of the grid on the **Grid** property sheet of the **Price Page Properties** dialog. The grid consists of horizontal and vertical lines that show the borders between rows and columns.

To change the grid style of a price page

- Right-click in the price page and select **Properties**.
- On the left side of the dialog, select **Grid**.
- On the right side of the dialog, adapt the default settings to your needs.

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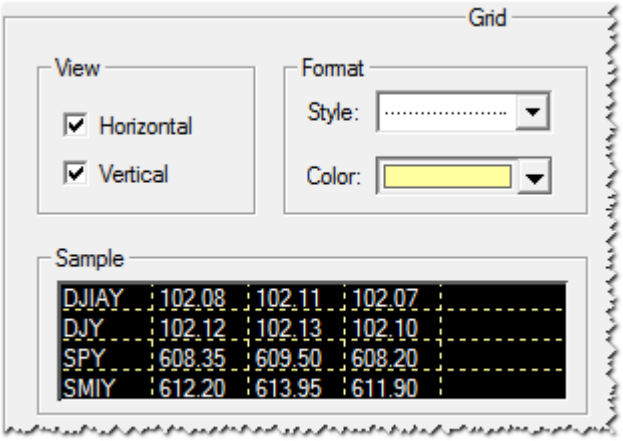
- You can see a preview for your settings in the **Sample** window at the bottom of the dialog.



Control	Description
Horizontal	Check to display horizontal grid lines between rows
Vertical	Check to display vertical grid lines between columns
Style	Line style of all visible grid lines
Color	Color of all visible grid lines

Changing Font and Colors of a Price Page

You can change the font of the price page texts, the color of the text and the background color of the price page on the **Font** property sheet of the **Price Page Properties** dialog. You can assign different colors for alternate rows and for old data (data that is not from today).

To change font and colors of a price page

- Right-click in the price page and select **Properties**.
- On the left side of the dialog, select **Font**.
- On the right side of the dialog, adapt the default settings to your needs.
- You can see a preview for your settings in the **Sample** window at the bottom of the dialog.

Control	Description
Font	Type of font used for price page texts
Font Style	Font style of price page texts (**Regular**, **Italic**, **Bold**, **Italic + Bold**)
Font Size	Size of the font used for price page texts
Foreground	Basic color of the price page text
Background	Background color of the price page
Use Alternate Color	Check to use a different color for every second row
Foreground	Color of the price page text of every second row
Background	Background color of every second row
Use different color…	Check to use a different color and font if the last trade or quote of this symbol is not from today
Include Bid/Ask	Check to also consider the latest Bid and Ask dates when identifying old data Uncheck to only use the date of the last trade to identify old data

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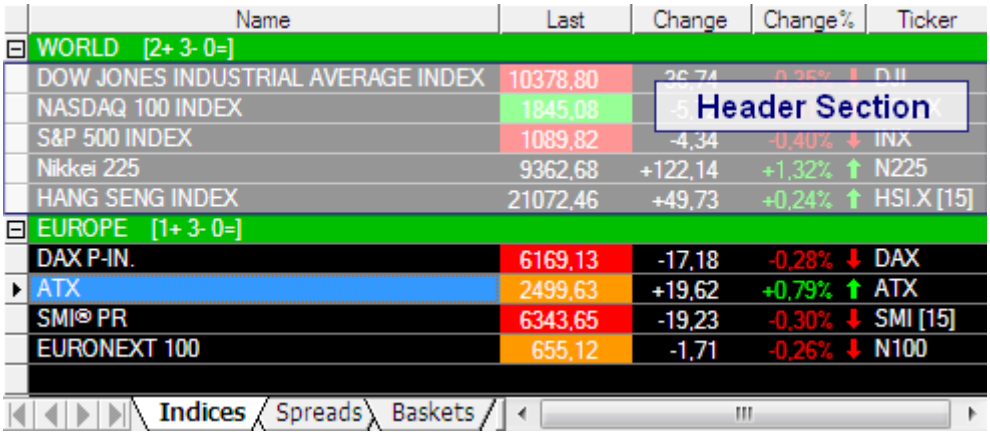
Font Style	Font style of rows that contain old data
Color	Text color of rows that contain old data

Inserting, Changing and Removing Headers

A header defines a section in a price page that can be collapsed and expanded. All rows that are shown beneath a header and before the next header belong to this header section. You can use headers to organize the content of long price pages.

The header also shows the total number of advancing (+), declining (-) and unchanged (=) symbols within its group. The window caption of the price page shows the total of advancing and declining symbols for all symbols on the current sheet. You can deactivate this display under **Tools > Options > Price Page** – see Price Page Settings on page 344 .



To insert a header into a price page

- Right-click on the row where the header should be inserted and choose **Insert Header**.
- The header is inserted in the selected row, moving the following rows down.

To rename a header

- Right-click on the header and choose **Edit**.
- Enter a new name for the header and press the ENTER key.

To change the colors of one header

- Right-click on the header and choose **Properties**.
- Choose a **Foreground** color for the text of this header.
- Choose a **Background** color for the background of this header.

To change the colors of all headers of a price page

- Right-click in the price page and choose **Properties**.
- On the left side of the dialog, select **Header**.
- On the right side of the dialog, choose the **Foreground** and **Background** color for all headers of this price page.

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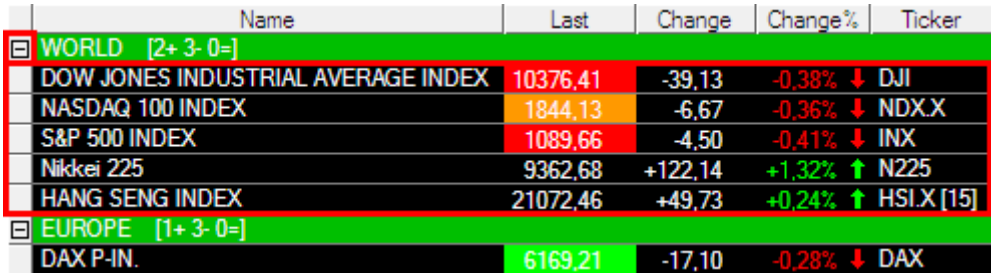
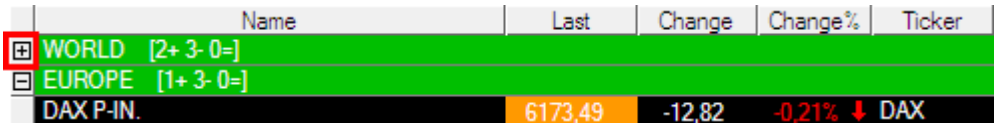
To collapse and expand a header section

- Click on the minus sign in the row header to collapse the header section.


Name
Last
Change
Change%
Ticker
WORLD [2+ 3- 0=]
DOW JONES INDUSTRIAL AVERAGE INDEX 10376,41 -39,13 -0,38% DJI
NASDAQ 100 INDEX 1844,13 -6,67 -0,36% NDX.X
S&P 500 INDEX 1089,66 -4,50 -0,41% INX
Nikkei 225 9362,68 +122,14 +1,32% N225
HANG SENG INDEX 21072,46 +49,73 +0,24% HSI.X [15]
EUROPE [1+ 3- 0=]
DAX P-IN. 6169,21 -17,10 -0,28% DAX

- All rows that belong to this header section are hidden.
- Click on the plus sign in the row header to expand the header section again.



To remove a header from a price page

- Right-click on the header and choose **Delete**.

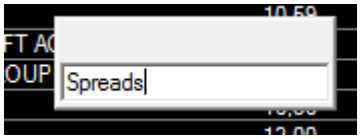
Adding and Organizing Sheets

A price page consists of at least one sheet. You can add additional sheets to a price page to make it easier to organize the contents of a price page. Each sheet can be customized independently, that means it can have its own columns, update styles, grid styles, font and colors.

Sheets are represented by tabs at the bottom of the price page. You can display a sheet by clicking on its tab.

To add a sheet to a price page

- Right-click on the sheet tabs and choose **Insert**.
- A text field is shown. Enter the name of the new sheet.



- Press the ENTER key. The new sheet is added behind the last sheet of the price page.

To rename a sheet

- Right-click on the tab of the sheet and choose **Rename**.
- A text field is shown. Enter the new name of the sheet and press the ENTER key.

> **Note** You cannot use the same name for different sheets in one price page.

To rearrange the sheets of a price page

- Click on the tab of the sheet.

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- Hold the mouse button down and move the sheet.
- Drag the sheet to its new position and release the mouse button to drop it there.

To move a symbol from one sheet of a price page to another

- Select the symbol(s) that you want to move.
- Right-click on the tab of the source sheet, where the symbols are displayed at the moment.
- Choose **Move To**, and then click on the name of the target sheet, to which you want to move the symbols.

To remove a sheet from a price page

- Right-click on the tab of the sheet and choose **Delete**.

Sorting the Contents of a Price Page

You can sort the rows of a price page by each visible column. For some columns, you can also define automatic sorting, which means that the row sort is updated regularly. You can set the update interval in seconds.

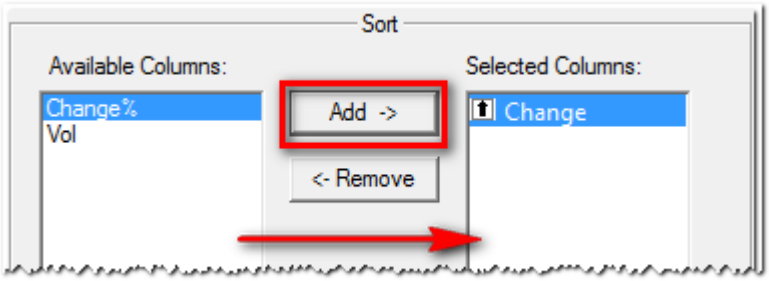
To sort the rows of a price page

- Right-click on the header of the column that you want to sort by and choose **Sort**.
- Choose **Ascending** to display the lowest values on top, or **Descending** to display the highest values on top.

> **Note** You can also double-click the column header to sort by this column. Each consecutive double-click reverses the sort order.

To use automatic sorting for a price page

- Right-click on any column header and choose **Sort > Automatic**.
- In the **Sort** dialog, choose the column that you want to sort by from the **Available Columns** list.
- Click **Add**. The column is moved to the **Selected Columns** list.



- In the **Automatic Sorting Options** section, select the **Every x seconds** checkbox.
- Enter the update interval in seconds. The price page will be re-sorted according to the current quote data after the amounts of seconds that you set here.

> **Note** You can use more than one column for automatic sorting. This will have the effect that the rows are initially sorted by the first column on the list. For rows that have the same value in this column, the second column will be used for sorting these rows, and so on.

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To reverse the sort order for a column used in automatic sorting

- In the **Sort** dialog, click on the arrow to the left of the column name in the **Selected Columns** list.
- The arrow to the left of the column name shows the currently used sort order.

Freezing a Column

The price page can be "frozen" at a given column. This means that when you scroll the price page to the right, the frozen columns always remain visible.

To freeze columns on a price page

- Right-click on the header of the rightmost of the columns that you want to keep visible and choose **Freeze Column**.
- This column and all columns left of it will always be visible even if you scroll the price page to the right.

To unfreeze the columns of a price page

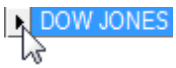
- Right-click on any column header and choose **Unfreeze Column**.

Selecting Rows or Columns of a Price Page

You can select more than one row or column of a price page, and then manipulate them all at once – you can for example move them, open them in new documents or delete them in one step.

To select several rows (columns) from a price page

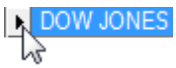
- Click on the header of the first row (column).



- Press and hold the CTRL key.
- Click on the headers of the other rows (columns) that you want to select.

To select several consecutive rows (columns) from a price page

- Click on the header of the first row (column).



- Press and hold the SHIFT key.
- Click on the header of the last row (column) that you want to select.

Linking Documents to a Price Page

Maybe you want to closely monitor several symbols at once. Instead of opening a separate chart, time and sales, options matrix, news, quick quote or market depth document for each of the symbols, you can create a price page that contains all of the symbols, create the other documents, and link them to the price page. This means that whenever you select a new symbol on the price page, the linked documents will also display this symbol (for news documents, only news stories that include the symbol's ISIN or ticker are displayed).

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Note You can also link documents to the price page view of a time and sales document or to a watch list in the same way as shown here. See also Linking Documents to Time and Sales on page 124.

The following example will show you how to link a chart to a price page. For other documents (time and sales, news, market depth, options matrix and quick quote), this works in the same way. You can even link several documents to one price page.

Note For time and sales documents containing multiple symbols, only the first symbol in the price page view of the time and sales document can be linked to another document.
For options matrix documents, the underlying symbol is linked to the price page.

To link a chart to a price page

- Create a price page with all the symbols that you want to monitor. See Opening Symbols in New Documents on page 64.
- Open a chart for one of these symbols. See Opening Symbols from Existing Documents on page 66.
- In the chart, right-click on the time series (bars, candles or other data points) and choose **Link**, and then choose the name of your price page.
- In the price page, double-click on any row header to switch to row highlight mode.
- To switch symbols, simply click on another symbol in the price page.

Note In linked charts, you can also use the up and down arrow keys of your keyboard to switch between the symbols of a price page. This behavior can be deactivated with the option **Use arrow keys (Up and Down) for navigating through linked charts** under **Tools** > **Options** > **Chart**.

Behavior of chart objects in linked charts

When you link a chart to a price page, its symbol (time series) is changed whenever you select a new symbol in the linked chart. The data compression and visible panes always stay the same for every symbol; the chart type is remembered per symbol, if changed. Chart objects behave in the following way:

- *Studies*, like indicators or signals, are shown for every symbol of the linked chart.
- *Drawing objects*, like trend lines or Pivot Points, are only shown for the symbol where they were drawn. This means every symbol can have its own drawing objects.
- *Chart overlays* are shown for every symbol of the linked chart.

Row highlight mode

Row highlight mode is indicated by a red arrow in the row header of the active row. To switch between normal mode and highlight mode in a price page, you have to double-click on any row header.

In highlight mode, you can switch between symbols in linked documents by clicking on a symbol in the price page or using the arrow keys of your keyboard.

Note When you link documents to a watch list, you cannot use the row highlight mode. To switch between symbols, you have to click on the row header of the symbol.

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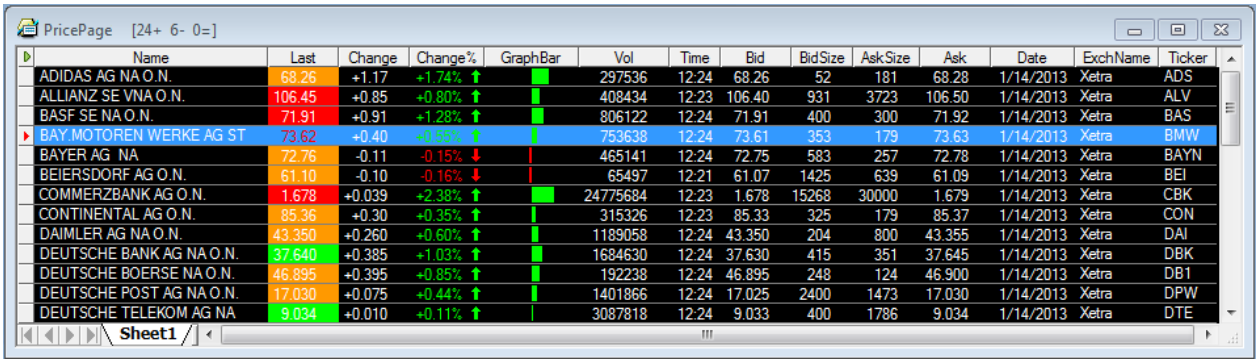
Loop documents linked to Price Page automatically

If you want to observe the markets without having to switch between different symbols in a Price Page manually, you can use Loop Documents. It allows you to display symbols on documents linked to Price Page one by one automatically in a certain interval. Once loop has been activated, loop starts with the first symbol in the Price Page and all documents which are linked to this Price Page will show the symbols one by one in the default time interval of 5 seconds.

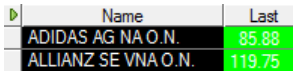
Available time intervals to choose from are: 5 Seconds, 15 Seconds, 30 Seconds, 1 Minute, 2 Minutes, 5 Minutes, 10 Minutes and Custom (1-1000 seconds).



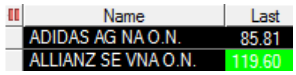
To activate / deactivate loop from a price page

Link a desired document (e.g. chart) to a Price Page with several symbols. See Linking Documents to a Price Page on page 89

Click the Play / Pause icon in the upper corner of the price page document:



The **Play** icon indicates that loop of Price Page documents is activated.
Click to pause the loop documents mode.



The **Pause** icon indicates that loop of Price Page documents is temporarily stopped.
Click to continue with loop documents mode.

Adding, Removing and Customizing Study Columns

TeleTrader Professional offers a large amount of analysis tools (studies) to calculate indicators and signals. All available TeleTrader studies that can be shown on a chart, including custom studies that you wrote yourself, can also be shown in a price page.

Depending on the study, one or more columns are added to the price page. For each row / symbol that is visible on the price page, the current study value is calculated. Per default, the studies are calculated for daily data, but you can also configure them to be calculated for other data compressions (Weekly, Monthly, Intraday, TickBar or Tick by Tick data).

Name rsi1 RSI movc1 Uppe movc1 Lowe
COMMERZBANK AG O.N. 38.811 1.301 1.343
BAY.MOTOREN WERKE AG ST 47.08 57.29 56.78
BASF SE NA O.N. 48.75 55.49 55.27
ADIDAS AG NA O.N. 51.96 57.71 57.68
ALLIANZ SE VNA O.N. 56.17 78.79 76.90
BEIERSDORF AG O.N. 59.29 51.95 51.98
BAYER AG NA 65.38 57.18 55.49
Ticker boll_sig1 Price boll_sig1 Direction boll_sig1 Text Time
AUDUSD 16:51
EURUSD 16:51
USDCAD 16:51
EURCHF 16:51
EURDKK 7.4376 Buy 16:51
EURGBP 16:51
EURJPY 16:51
EURNOK 16:51

For each inserted study, you can hide certain study columns, suspend calculation for some rows to improve performance, rename study , change the parameters for a study (including the time region / history that is downloaded for each symbol), and define custom colors for study columns.

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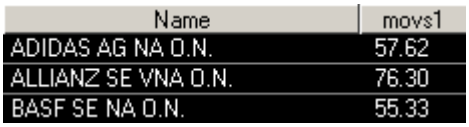
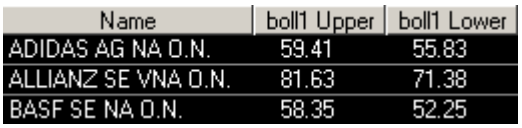
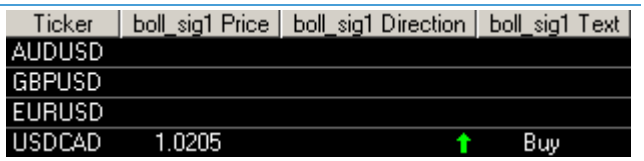
Note You can include all studies already visible in a price page, when opening a new chart with the option **Insert existing studies when opening chart from price page**. To change this setting, choose **Tools > Options > Price Page** from the menu bar.

For more information about studies in general, see Analysis Tools on page 299.

To add a study to a price page

- Right-click in the price page and select **Insert Study**.
- All available studies are shown on the left side of the **Insert Study** dialog. Click on the study that you want to insert. See also Inserting Studies on page 300 for more details about the **Insert Study** dialog.
- On the **Parameters** tab on the right side, adapt the bases and parameters of your study to your needs, and choose the compression that should be used for you study (for example, **Daily**, **10 Minutes**,..). For details about the possible settings, see below on page 93.
- On the **Appearance** tab, adapt the colors that should be used for the study columns (if necessary). For details about the possible settings, see below on page 94.
- Click **Insert** to insert the study into the price page. Depending on the study, one or several study columns will be added to your price page:

Lines	For lines, such as the *Moving Average Simple*, one column will be added to the price page. It displays the most recent value for each symbol (depending on the chosen compression).	
Areas	For areas, such as *Bollinger Bands*, two columns will be added to the price page. They display the current **Upper** and **Lower** value of the study area for each symbol.	
Markers	For markers, such as the *Hammer* candlestick pattern, three columns will be added to the price page. They display the **Text**, **Direction** and **Price** for the marker. A marker will only be shown for those rows / symbols where the marker condition has been met on the current bar (depending on the chosen compression).	

To hide some study columns on a price page

Some studies that consist of several areas, markers or lines add many columns to the price page when inserted. You can hide some of these columns and only keep those visible that you need.

- Right-click in the price page and choose **Properties**.
- In the **Price Page Properties** dialog, click **Columns**.
- Select the column that you want to remove from the **Displayed Columns** list.
- Click the **<<** button.

To add hidden study columns to a price page again

- Right-click in the price page and choose **Properties**.
- In the **Price Page Properties** dialog, click **Columns**.

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- From the **Displayed Columns** list, choose the column after which the new column should appear.
- Choose the column that you want to add from the **Available Columns** list.
- Click the **>>** button.

To remove a complete study from a price page

- Remove all visible study columns from the price page (see above on page 92). When all columns of a study are hidden / removed, the complete study will be removed from the price page.

> **Note** You can also remove all visible study columns by right-clicking on a study cell and choosing **Delete** from the context menu. In the dialog that appears, select the **Study** radio button (e.g. **Study: MACD**) and click the **OK** button.

To suspend study calculations for specific symbols (rows)

Since calculating study values for many symbols at once can lead to performance problems, you can suspend study calculations for specific symbols (rows).

- Right-click the symbol / row and choose **Suspend Study Calculations**.

> **Note** Once study calculations are suspended, last updated values will stay visible until calculations are continued. To continue study calculations at a later point, right-click the symbol / row again and choose **Continue Study Calculations**.

To rename study column on a price page

- Right-click study column header in the price page and choose **Rename Study....**
- In the **Set Study Name** dialog, modify current column name or enter a new one.
- Click the **Ok** button.

To set the parameters for a study in price pages

On the **Parameters** tab of the **Insert Study** dialog, you can set the bases and input parameters for a study before you insert it. After you have inserted a study, you can still change these parameters in the **Price Page Properties** dialog under **Studies > [Study Name] > Parameters**.

Setting study parameters in price pages generally works the same way as setting study parameters in charts (see Setting the Parameters of a Study on page 302 for details), with the following differences:

- In the **Data Object** column under **Bases**, you will per default find an entry **Row Symbol**. Use this entry to calculate the study for each symbol of the price page. If you choose a fixed base symbol instead (using the entry **Other** and Symbol Search), the same symbol will be used as the calculation base for every row. This can be useful for studies that need two bases (for example *Spread Relative*).
- In the **Compression** column under **Bases**, you can change the data compression of the time series that is used to calculate the study values. The compression is set to **Daily** per default, but you can also use **Monthly**, **Weekly**, **Intraday**, **TickBar** and **Tick by Tick** compressions instead.
- On the bottom right of the **Parameters** tab, you can change the time region that is used for calculating the study. This setting influences the amount of historical time series data that is downloaded for each symbol of the price page. Per default, an appropriate setting is chosen automatically for each study (often depending on the currently set study parameters such as the *period* of a Moving Average). If you do not get the appropriate results for your study, you can change this setting by selecting **Use custom time region** and entering the appropriate amount of bars.

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Note If you add too little history, the study might not be calculated (leading to an empty value in the study column),
If you add too much history, this can affect performance, since the history must be downloaded for every symbol in the price page.

- It is at the moment not possible to base studies on other studies in price pages (although that is of course possible in charts, see Basing Studies on Other Studies on page 311).

To define the appearance (colors) for a study in price pages

On the **Appearance** tab of the **Insert Study** dialog, you can choose custom colors that should be used for the study columns on a price page before you insert the study. After you have inserted a study, you can still change these colors in the **Price Page Properties** dialog under **Studies > [Study Name] > Appearance**.

Per default, if not defined otherwise under **Appearance**, the column is shown in the same color as all other price page columns.

In contrast to defining the appearance of studies in charts (see Defining the Appearance of a Study on page 305), you can only choose from the following settings for price page study objects:

Lines	Check the box next to the **Color** selection to use a custom color for the study column.	
Areas	*Fixed coloring*	Check the boxes next to the **Line #1** and **Line #2** selections to use a custom color for the **Upper** and **Lower** study columns. Each column will have its own color.
	Relative coloring	Check the boxes next to the **#1 above #2** and **#2 above #1** selections to use different colors depending on which of the two area lines is higher (useful for studies such as *Moving Average Cross*). Both columns will have the same color (depending on which of the two values is higher at the moment).
Markers	Check the box next to the **Up Border** and **Down Border** color selections to use a custom color for the **Text**, **Direction** and **Price** study columns.	

Inserting Price Page Expressions

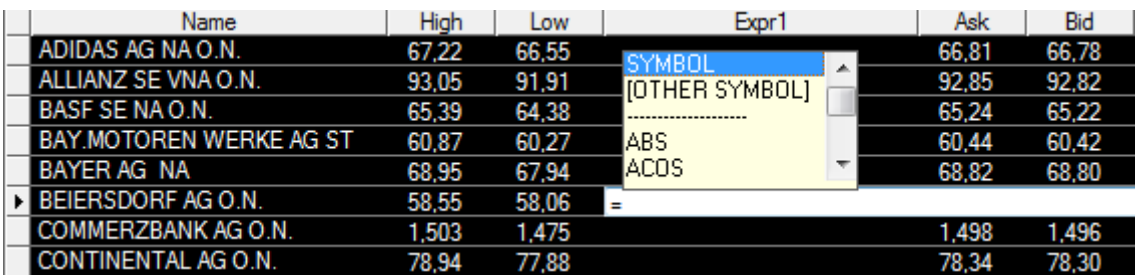
A price page expression is a mathematical calculation that can be shown as an additional column in any price page document. It uses one or more numerical values from the existing price page for its calculations.

You can only use symbols and data fields that are currently visible in the price page. Before you insert an expression, make sure that all the values / columns that you want to use in your calculations are present on the price page. When you insert a price page expression, you can choose symbols, operators and fields from on-the-fly assistant lists or add operators and numbers to your expression manually.

As there are many possible uses for price page expressions, we will introduce them with a simple example. For more details about the syntax of price page expressions, Syntax of Price Page Expressions on page 96

To insert a price page expression – an example

This price page expression shows the difference between the current High and Low price of a symbol.



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- Make sure that the columns *High* and *Low* are visible on the price page. See also Adding and Removing Columns on page 80.
- Right-click in the price page and select **Insert Expression**.
- In the new column **Expr1**, double-click the cell where you want to insert the expression.
- Type an equal sign **=**.
- In the list that appears, double-click **SYMBOL** (this refers to the current symbol of the row that you click in).
- In the field/column list, double-click the **HIGH** field. You can scroll the list to reveal more fields.
- Double-click the **–** operator.
- From the following lists, choose **SYMBOL** again and then the **LOW** field.Press the ENTER key. The expression is now added in the chosen cell.

Note Instead of using double-click, you can also use the ↑ and ↓ keys to highlight and then the **Tab** key to select a symbol or a TeleTrader function.

To edit a price page expression

- Double-click the cell that contains the price page expression, or
- Highlight the cell and press F2 on your keyboard or
- Highlight the cell and type in the equal sign **=** (this would immediately delete the existing content).

To copy a price page expression to another cell

- Double-click the cell that contains the price page expression (or highlight the cell and press F2).
- The expression formula is automatically highlighted. You can now copy or cut the formula and paste it to another cell in the expression column.

To fill the complete expression column with one expression

- Right-click the cell that contains the price page expression that you want to apply to the complete column.
- Choose **Fill Column with Selection**. The formula of the selected cell will be copied into all cells of the selected expression column. Other (existing) content will be overwritten.

Note When you insert a new symbol into the Price Page, the new expression cell will be automatically filled with the expression (if available) from the previous row.

To change the name of an expression column

- Right-click the column header of the expression column (for example, **Expr1**) and choose **Rename Expression...**.
- In the dialog, type a new name for the expression column.

To delete an expression column

Warning *This action cannot be undone.* When you remove an expression column, all formulas it contained are also removed from the price page. Price page expressions are not stored anywhere (unlike studies), so after an expression has been removed, you would have to type it again

- Right-click in the price page and choose **Properties**.
- In the **Price Page Properties** dialog, click **Columns**.

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- Select the column which you want to remove from the **Displayed Columns** list.
- Click the **<<** button.

> **Note** When you remove a column (field) or row (absolute symbol) that is used in one or more price page expressions, a warning message will be shown informing you that all affected expression(s) will become invalid if you continue. The expression column(s) will remain on the price page, but the formulas will be invalid (they show *n/a*).

To save a price page expression

Price page expressions including their names can only be saved within the price page document, exported virtual page and workspace. See also Organizing and Saving Documents on page 150.

Syntax of Price Page Expressions

A price page expression can consist of symbols, fields, operators, functions and numbers. The basic steps to insert an expression are always the same. For more information about the possibilities of price page expressions, see the detailed syntax description below.

To insert a price page expression – basic steps

- Right-click in the price page and select **Insert Expression**.
- In the new column **Expr1**, double-click the cell where you want to insert the expression.
- Type an equal sign **=** to start the price page expression.
- Do one of the following:
  - In the list that appears, double-click (or use the ↑ and ↓ keys to highlight and then the TAB key to select) a symbol or a TeleTrader function.
  - Press the ESCAPE or BACKSPACE key to make the list disappear and type parts of the expression manually. While typing, appropriate functions are recommended automatically. For example, typing an S will show a list with all functions starting with S.
- Continue creating your expression using the syntax described below. Appropriate lists appear after using symbols, operators or functions.
- After you have finished writing the expression, Press the ENTER key. The expression is now added in the chosen cell.

Syntax of price page expressions

Relative Symbol (Row Symbol)	Relative symbols refer to the current symbol (the symbol that shows up in the same row as the expression cell). These symbols are not fixed – they change automatically in every row and thus make it easier to copy a formula to another row or a complete column. Use the keyword `SYMBOL` to refer to the current row symbol.
Absolute Symbol	Absolute symbols refer to a specific symbol that will be the same for every row. They can be used if you want to for example use the same benchmark symbol (index) in every row. Absolute symbols are enclosed in square brackets. To use an absolute symbol in an expression, either choose `OTHER SYMBOL` from the list or type an opening square bracket `[` and choose the symbol from the list that appears by double-clicking it. The symbol list shows the symbols that are already visible on the price page. The closing square bracket is inserted automatically as soon as you choose the symbol. For example: `=[ADIDAS AG O.N. (XETRA)]`
Fields	For every symbol (absolute or relative), you can specify which field should be used for

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	the calculation. A list with all available fields (that is, all columns that are currently visible in the price page including existing expressions and studies in price page) appears after you enter a symbol – choose the appropriate field by double-clicking it. The field is added to the symbol using the . (dot) operator (see below). Field names have to be enclosed in single quotes.
	For example:
	`=SYMBOL.'VOL'`
	`=[ADIDAS AG O.N. (XETRA)].'LAST'`

Operators	Operators connect symbols/fields with each other or with a constant number. In addition to the standard mathematical operators, the dot operator is used to specify the field for a symbol. You can enter operators from the keyboard manually, or choose them from the operator list when it appears. . Dot operator: Use it directly after a symbol to specify a field value to use for this symbol. + Addition - Subtraction / Division * Multiplication ^ Power () Round brackets for changing operator precedence of mathematical operators Standard operator precedence is the same as for all mathematical calculations: Brackets – Power – Multiplication and Division – Addition and Subtraction.
TeleTrader Functions	You can use some functions of the TeleTrader Language inside price page expressions. The list of available functions is automatically shown at the start of an expression and after entering a mathematical operator. You can also type the function manually - while typing, appropriate functions are recommended automatically. For example, typing an S will show a list with all functions starting with S. After choosing a function, an opening bracket is inserted and the list of symbols is shown. You have to close the function brackets manually. For example: `=MIN(SYMBOL.'OPEN',SYMBOL.'CLOSE')` For more information about the available functions, see the Function Reference on page 501.
Numbers	In addition to symbols, you can also use constant numbers in an expression. To use a number, you have to type it on your keyboard manually. For example, you could multiply the volume of a symbol by two using the following syntax: `=SYMBOL.'VOL'*2`

More examples

`=SYMBOL.'Last'*3`	Multiply the Last price of the symbol that is shown in the same row by three.
`=SYMBOL.'LAST'*[EUR/USD SPOT (FOREX GTIS BASIC FX)].'LAST'`	Multiply the Last price of the symbol that is shown in the same row with the current EURUSD rate (the EURUSD symbol must be shown in the same price page, otherwise this expression won't work).
`=(SYMBOL.'HIGH'+SYMBOL.'LOW'+SYMBOL.'LAST')/3`	Add the High, Low and Last price for the symbol that is shown in the current row and divide it by three. (This calculation is also called the typical price, used for example in the Commodity Channel Index.) The columns High and Low must be added to the price page first, otherwise this expression won't work. For this rather complex expression, you have to manually enter round brackets to force the correct operator precedence.

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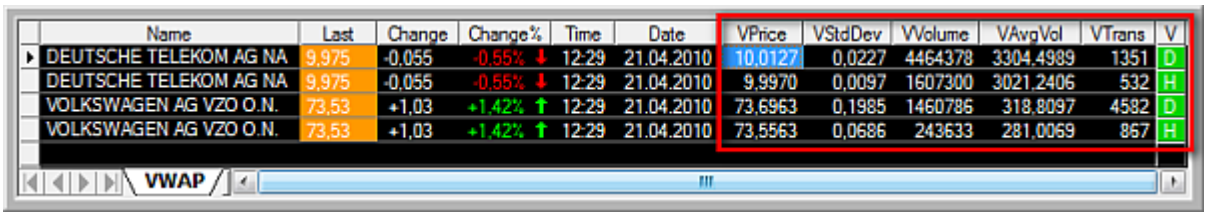
Adding, Removing and Customizing the VWAP Columns

The Volume Weighted Average Price (VWAP) of a stock over a specified market period is defined as the average price paid per share during that period (price of each transaction in the market weighted by its volume). It is calculated from the volumes and prices of all trades during a certain period of time.

Price page documents in TeleTrader Professional can be extended to show several VWAP columns: The Volume Weighted Average Price (**VPrice**) itself, its standard deviation (**VStdDev**), total volume (**VVolume**), average volume (**VAvgVol**) and the total number of transactions (**VTrans**) in the defined period. The VWAP values are shown with 4 decimals.



Name	Last	Change	Change%	Time	Date	VPrice	VStdDev	VVolume	VAvgVol	VTrans	V
DEUTSCHE TELEKOM AG NA	9,975	-0,055	-0,55%	12:29	21.04.2010	10,0127	0,0227	4464378	3304,4989	1351	D
DEUTSCHE TELEKOM AG NA	9,975	-0,055	-0,55%	12:29	21.04.2010	9,9970	0,0097	1607300	3021,2406	532	H
VOLKSWAGEN AG VZO O.N.	73,53	+1,03	+1,42%	12:29	21.04.2010	73,6963	0,1985	1460786	318,8097	4582	D
VOLKSWAGEN AG VZO O.N.	73,53	+1,03	+1,42%	12:29	21.04.2010	73,5563	0,0686	243633	281,0069	867	H

VWAP

By default, the VWAP is calculated over daily data. All parameters (custom time period, price and volume filters) can be adjusted to fit your needs. You can also manually edit the appropriate VWAP range columns directly on the price page, temporarily freeze the calculation of VWAP data and add remarks to each row. Other default settings for the VWAP tool, like the default type or V-Button colors, can be set under **Tools > Options > Price Page > VWAP**: See VWAP Settings on page 345.

Note Only for volume data from the XETRA(CEF) feeds, the columns **Volume** and **VVolume** might show different values, because CEF data feeds include some special order types in the total volume but do not show individual quote events.

To add the VWAP columns to a price page

- Right-click in the price page and select **Insert VWAP Columns**.

To remove the VWAP columns from a price page

- Right-click in the price page and select **Remove VWAP Columns**.

To remove the VWAP data for one symbol (row)

- Right-click on the V-Button D of the symbol and choose **None**.

To choose a time period for VWAP calculation

- Right-click on the V-Button D of the symbol and choose a time period:

Daily	Calculates the Volume Weighted Average Price with data from the current trading session. You can choose a different day in the **Date/Time** section of the **VWAP Properties** dialog (see below).
Last Hour	Calculates the VWAP with data from the last hour.
Custom	Calculates the VWAP for a custom time period. Choose the appropriate settings in the **Date/Time** section of the **VWAP Properties** dialog (see below).

Note If you want to see VWAP calculations with different time periods for the same symbol in one price page, you can easily create a copy of any symbol and apply a different time period to it. See Copying Symbols on page 75 for details.

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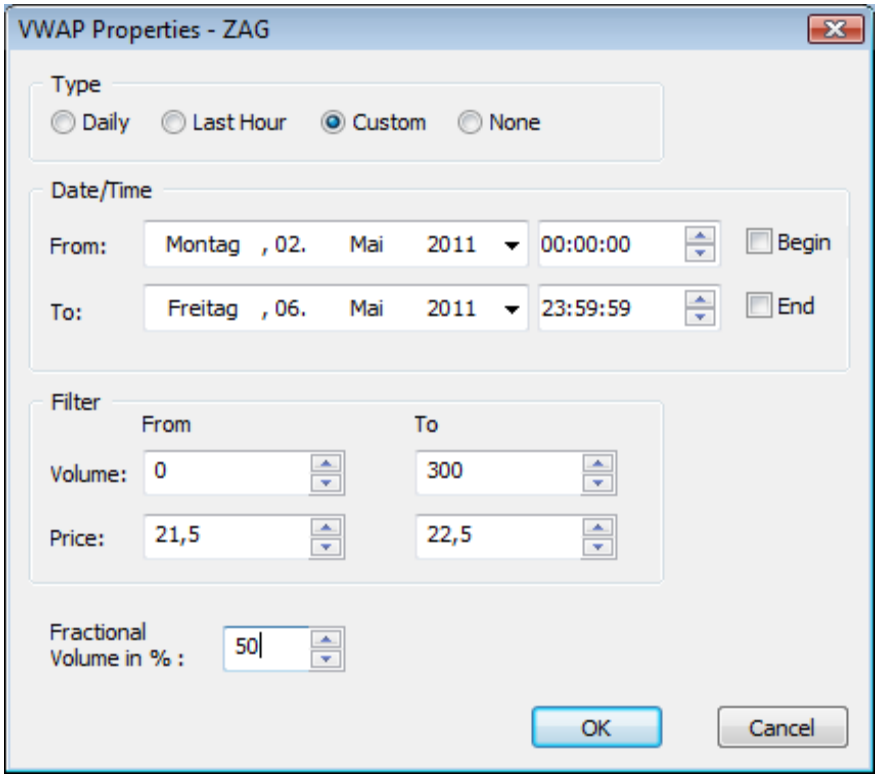
To customize the VWAP calculation parameters for a symbol

- Click on the V-Button D of the symbol.
- In the **VWAP Properties** dialog, adapt the default settings to your needs:



Type	Choose the time period used for calculating the VWAP: **Daily**, **Last Hour**, **Custom** or **None**.
Date / Time	Choose the begin and end date and time of a custom time period used for calculating the VWAP. The maximum time period is 7 calendar days (calculation cross trading sessions is possible). Check the **Begin** box to set the start time of the period to the beginning of the chosen day. Check the **End** box to set the end date and time to the end of the maximum time period (7 calendar days).
Filter	Enter the lower and upper boundaries for the volume or price range of the trades that should be included in the calculation of the VWAP.
Fractional Volume in %	Enter a percentage of the total volume. The calculated fraction of the total volume is displayed in the column **VFVol**.

Note All the settings above can also be manipulated from within the price page by using the editable columns **VDateF** (start date), **VDateT** (end date), **VTimeF** (start time), **VTimeT** (end time), **VPriceF** (lower price limit), **VPriceT** (upper price limit), **VVolF** (lower volume limit), **VVolT** (upper volume limit) and **VFVar** (total volume fraction).

To temporarily freeze VWAP calculation for a symbol

- Right-click on the V-Button D and choose **Freeze**.

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To add remarks to VWAP data

- Add the editable column **Text** to your price page (see Adding and Removing Columns on page 80).
- Double-click the empty cell and enter your remarks.

> **Note** You can also press F2 to edit the contents of the cell.

- Press the ENTER key.

Adding, Removing and Customizing the News Flash Columns

You can show the latest related news stories for a symbol in a price page. The **News Flash** button displays the number of recent news stories; the **News Headline** column displays the latest headline. This headline is also shown in a tooltip when moving the mouse pointer over the News Flash button. The entire news story can be read by clicking the News Flash button.

Name	Last	N	News Headline
ADIDAS AG O.N.	46,075	6	Korrektur: Christian Tourres verkauft 100.000 Adidas-Aktien
ALLIANZ SE VNA O.N.	84,48	1	DGAP-PVR: Allianz SE: Release according to Article 26,
BASF SE NA O.N.	47,950	1	BASF hievt Prognose für 2010 nach oben [22.09.2010
BAY.MOTOREN WERKE AG ST	49,405	13	BMW-Chef: China könnte wichtigster Markt werden
BAYER AG NA	52,970	6	Bayer erhält US-Zulassung für Verhütungspille Beyaz
BEIERSDORF AG O.N.	45,340	5	DGAP-PVR: Beiersdorf Aktiengesellschaft: Release
COMMERZBANK AG O.N.	6,099	16	DGAP-CMS: Commerzbank AG: Release according to Article
DAIMLER AG NA O.N.	44,500	19	AKTIE IM FOKUS: Volkswagen sehr fest - Bericht über
DEUTSCHE BANK AG NA O.N.	41,315	130	DGAP-DD: Deutsche Bank AG deutsch [06.10.2010
DEUTSCHE BOERSE NA O.N.	48,93	2	DGAP-PVR: Deutsche Börse AG: Veröffentlichung gemäß §
DEUTSCHE POST AG NA O.N.	13,310	4	ROUNDUP 2: Deutsche Bank wegen Postbank und

You can customize the time period that is used for News Flash retrieval – by default, only today's news stories are taken into account.

The News Flash button is colored depending on the age of the latest news update. To help you stay on top of current developments, the entire row of a symbol can be colored for a few seconds whenever a news story arrives. You can configure how long a news flash is active on a price page and specify the colors used under **Tools > Options > Price Page > News Flash** (see News Flash Settings on page 344).

To add the News Flash columns to a price page

- Right-click in the price page and choose **Insert News Flash**.

To open related news stories for a symbol

- Click the News Flash button 3 of the symbol.

To change the time period for News Flash retrieval

- Right-click the News Flash button 3 of the symbol and choose **Properties**.
- In the **Price Page Properties** dialog, click **News Flash**.
- Under **Range**, adapt the **Display Last...** option to your needs.

> **Note** You can also filter the news stories that are included in the price page by service or category. See Filtering News Stories on page 107 for details about the possible settings.

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To insert a news alert for a symbol

- Right-click the News Flash button 3 of the symbol and choose **Insert News Alert**.
- In the **Alerts** window, adapt the news alert settings to your needs. See News Alerts on page 325 for details about the possible settings.

To remove the News Flash columns from a price page

- Right-click in the price page and choose **Remove News Flash**.

Changing the Time interval of a Loop

You can change the time interval of the loop in the price page on the **Loop Documents** property sheet of the **Price Page Properties** dialog.

To change time interval of a loop

- Right-click in the price page and select **Properties**
- On the left side of the dialog, select **Loop Documents**
- On the right side of the dialog, adapt the default setting to your needs.

Control	Description
Choose time interval	Available periods: 5 Seconds, 15 Seconds, 30 Seconds, 1 Minute, 2 Minutes, 5 Minutes, 10 Minutes and Custom (1-1000 second(s))

Displaying Chain Symbols in a Price Page

Apart from "normal" symbols, price pages can also display so-called *chain symbols*. This is a special symbol type that is in essence a pointer to a list of normal symbols of different types, usually a list of index constituents. The list of symbols contained in a chain is automatically updated on the server. This means that when for example some new stocks are added to the list of index constituents, the list of symbols will be automatically updated in the price page.

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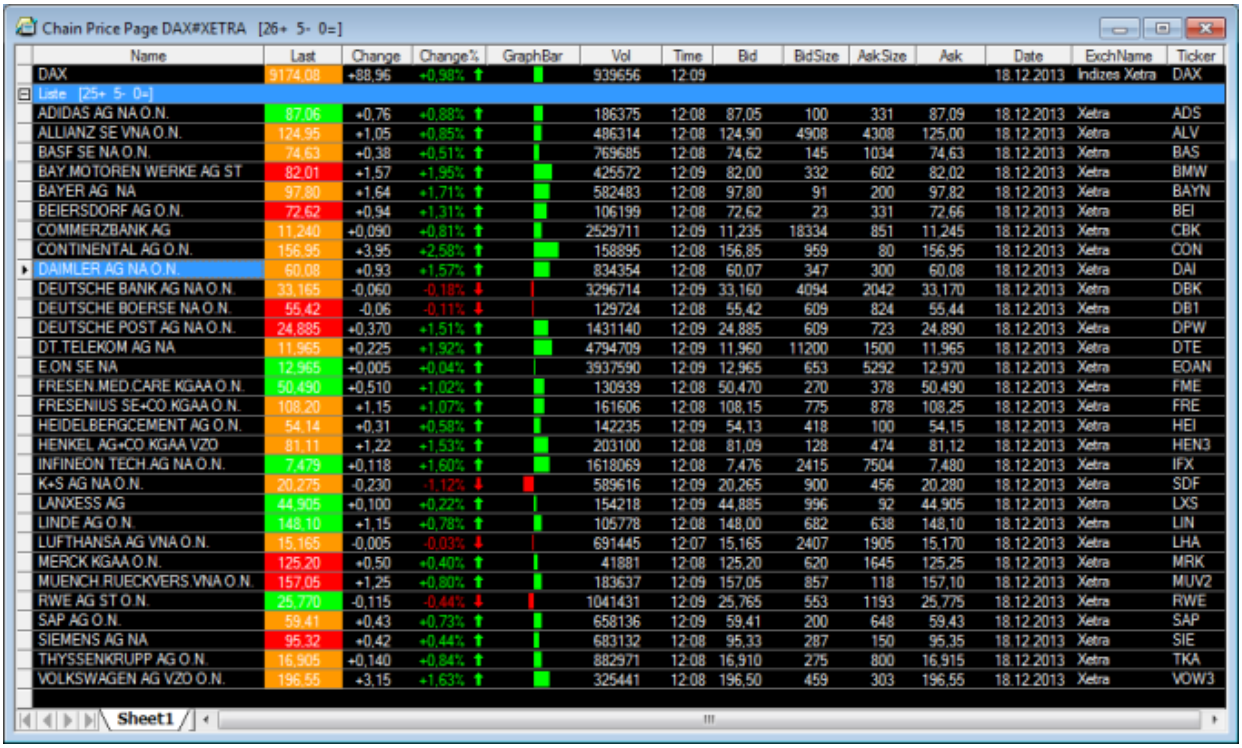
Chain symbols can also hold a so-called *main symbol*. This symbol is usually an index symbol (if the chain holds a list of index constituents). The main symbol is shown on top of the price page, separated from the symbol list by a price page header. The name of the chain symbol is shown in the title of the price page – chain symbol names typically contain a pound sign (for example, DAX#XETRA or INDU#US).



Name	Last	Change	Change%	GraphBar	Vol	Time	Bid	BidSize	AskSize	Ask	Date	ExchName	Ticker
DAX	9174,08	+88,96	+0,98%		939656	12:09					18.12.2013	Indizes Xetra	DAX
Liste [25+ 5- 0=]													
ADIDAS AG NA O.N.	87,06	+0,76	+0,88%		186375	12:08	87,05	100	331	87,09	18.12.2013	Xetra	ADS
ALLIANZ SE VNA O.N.	124,95	+1,05	+0,85%		486314	12:08	124,90	4908	4308	125,00	18.12.2013	Xetra	ALV
BASF SE NA O.N.	74,63	+0,38	+0,51%		769685	12:08	74,62	145	1034	74,63	18.12.2013	Xetra	BAS
BAY.MOTOREN WERKE AG ST	82,01	+1,57	+1,95%		425572	12:09	82,00	332	602	82,02	18.12.2013	Xetra	BMW
BAYER AG NA	97,80	+1,64	+1,71%		582483	12:08	97,80	91	200	97,82	18.12.2013	Xetra	BAYN
BEIERSDORF AG O.N.	72,62	+0,94	+1,31%		106199	12:08	72,62	23	331	72,66	18.12.2013	Xetra	BEI
COMMERZBANK AG	11,240	+0,090	+0,81%		2529711	12:09	11,235	18334	851	11,245	18.12.2013	Xetra	CBK
CONTINENTAL AG O.N.	156,95	+3,95	+2,58%		158895	12:08	156,85	959	80	156,95	18.12.2013	Xetra	CON
DAIMLER AG NA O.N.	60,08	+0,93	+1,57%		834354	12:08	60,07	347	300	60,08	18.12.2013	Xetra	DAI
DEUTSCHE BANK AG NA O.N.	33,165	-0,060	-0,18%		3296714	12:09	33,160	4094	2042	33,170	18.12.2013	Xetra	DBK
DEUTSCHE BOERSE NA O.N.	55,42	-0,06	-0,11%		129724	12:08	55,42	609	824	55,44	18.12.2013	Xetra	DB1
DEUTSCHE POST AG NA O.N.	24,885	+0,370	+1,51%		1431140	12:09	24,885	609	723	24,890	18.12.2013	Xetra	DPW
DT.TELEKOM AG NA	11,965	+0,225	+1,92%		4794709	12:09	11,960	11200	1500	11,965	18.12.2013	Xetra	DTE
E.ON SE NA	12,965	+0,005	+0,04%		3937590	12:09	12,965	653	5292	12,970	18.12.2013	Xetra	EOAN
FRESEN.MED.CARE KGAA O.N.	50,490	+0,510	+1,02%		130939	12:08	50,470	270	378	50,490	18.12.2013	Xetra	FME
FRESENIUS SE+CO.KGAA O.N.	108,20	+1,15	+1,07%		161606	12:08	108,15	775	878	108,25	18.12.2013	Xetra	FRE
HEIDELBERGCEMENT AG O.N.	54,14	+0,31	+0,58%		142235	12:09	54,13	418	100	54,15	18.12.2013	Xetra	HEI
HENKEL AG+CO.KGAA VZO	81,11	+1,22	+1,53%		203100	12:08	81,09	128	474	81,12	18.12.2013	Xetra	HEN3
INFINEON TECH.AG NA O.N.	7,479	+0,118	+1,60%		1618069	12:08	7,476	2415	7504	7,480	18.12.2013	Xetra	IFX
K+S AG NA O.N.	20,275	-0,230	-1,12%		589616	12:09	20,265	900	456	20,280	18.12.2013	Xetra	SDF
LANXESS AG	44,905	+0,100	+0,22%		154218	12:09	44,885	996	92	44,905	18.12.2013	Xetra	LXS
LINDE AG O.N.	148,10	+1,15	+0,78%		105778	12:08	148,00	682	638	148,10	18.12.2013	Xetra	LIN
LUFTHANSA AG VNA O.N.	15,165	-0,005	-0,03%		691445	12:07	15,165	2407	1905	15,170	18.12.2013	Xetra	LHA
MERCK KGAA O.N.	125,20	+0,50	+0,40%		41881	12:08	125,20	620	1645	125,25	18.12.2013	Xetra	MRK
MUENCH.RUECKVERS.VNA O.N.	157,05	+1,25	+0,80%		183637	12:09	157,05	857	118	157,10	18.12.2013	Xetra	MUV2
RWE AG ST O.N.	25,770	-0,115	-0,44%		1041431	12:09	25,765	553	1193	25,775	18.12.2013	Xetra	RWE
SAP AG O.N.	59,41	+0,43	+0,73%		658136	12:09	59,41	200	648	59,43	18.12.2013	Xetra	SAP
SIEMENS AG NA	95,32	+0,42	+0,44%		683132	12:08	95,33	287	150	95,35	18.12.2013	Xetra	SIE
THYSSENKRUPP AG O.N.	16,905	+0,140	+0,84%		882971	12:08	16,910	275	800	16,915	18.12.2013	Xetra	TKA
VOLKSWAGEN AG VZO O.N.	196,55	+3,15	+1,63%		325441	12:08	196,50	459	303	196,55	18.12.2013	Xetra	VOW3

Note Some chains do not contain a main symbol. In that case, only the symbol list is shown in the price page.

To open a chain symbol in a price page

- Use Symbol Search to find and open a specific chain symbol: See Opening Symbols from the Search Results on page 38.
- Type the ticker or name of a chain symbol (for example DAX#XETRA) into a price page (Smart Symbol Search) to replace all symbols that are currently visible in the price page with the chain: See Calling Symbol Search from a Document on page 41.
- Open a chain symbol that was stored in FastLook: See Opening Symbols from FastLook on page 167.
- If a "normal" symbol is also part of a chain (for example, a stock that is part of an index), you can open the appropriate chain by right-clicking the symbol and choosing **Related Symbols > <Name of related chain>**. See Opening Related Symbols in a Price Page on page 71.

To turn off automatic list updates for chain symbols

As already mentioned, the list of symbols which are part of a chain is automatically updated on the server. New symbols are added to the chain, other symbols are removed from the chain in regular intervals. If you display a chain symbol in a price page, the symbol list will be automatically updated after a server-side change. This means that for example you'll always get the current list of index constituents for the DAX#XETRA or INDU#US index chain in your price page. Those automatic updates of the list can also be switched off:

- Right-click in the chain price page and choose **Automatic List**.
- The check mark next to this entry disappears, and the name of the chain (for example, DAX#XETRA or INDU#US) is removed from the price page title. The symbol list on the price page is not updated automatically

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anymore, which means that you can add / remove symbols manually. The price page now behaves exactly like a price page without a chain symbol. Of course, quote updates for the symbols of the price page will still work.

Note

In some situations (for example, when you try to add symbols or change the sort order of a chain price page), Professional automatically suggests to turn off automatic list updates.

The following message is shown in that case: **This operation will break the connection with the chain symbol for this document. Lists will no longer be updated. Do you want to continue?**

Click **Yes** to turn off automatic list updates and complete the operation (for example, the new symbol will be added, the sort order will be changed), or click **No** to keep automatic lists updates turned on and cancel the operation (for example, the new symbol will not be added, the sort order will stay the same).

To turn on automatic list updates for chain symbols

Warning

This action cannot be undone. When you turn on automatic list updates, the symbol list on the price page is now updated automatically from the server. This also means that symbols that you have manually added are removed from the price page, new symbols might be inserted automatically, and a changed sort order is reverted to the default. Also, a different price page template might be applied automatically.
This command is only available for price pages that previously contained a chain symbol at some point, but where you have turned off the automatic list updates manually.

- Right-click in the price page and choose **Automatic List** again.
- The check mark next to this entry is shown again, and the name of the chain (for example, DAX#XETRA or INDU#US) is added to the price page title. The symbol list on the price page is now updated automatically from the server, and the appropriate price page template for this chain is applied if necessary.

To show and hide the main symbol of a chain

- Right-click in the chain price page and choose **Show Main Symbol** or **Hide Main Symbol**.

Chain symbols and price page templates

Whenever a chain symbol is added to a price page, an appropriate price page template is applied automatically. The template is chosen based on the chain type.

You can of course also manually apply a template when opening the price page: See Applying Templates to Documents on page 146.

A new template might also be applied automatically when you change the chain symbol in an already open price page document, or turn on automatic list updates for a price page that previously contained a chain symbol.

Customizing Charts

For a chart document, you can customize the following settings in the **Chart Properties** dialog:

Property Sheet	Description
General	General chart properties, such as the amount of data displayed, data compression, time scale properties and bookmark colors. See Customizing the General Chart Properties on page 104
Pane x	Change the appearance of a chart pane, such as its background color, grid and price scale properties. See Changing the Background Color of a Pane on page 225 and Customizing the Chart Pane Properties on page 104

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> [Symbol Properties]	Properties of each displayed symbol (time series), such as the chart type, line style, color coding of bars and trading sessions. See Customizing Symbol / Time Series Properties on page 105
> [Drawing Object Properties]	Properties of each drawing object, such as the line style, auto-hide options and optional parameters. See Customizing Drawing Objects on page 270
Studies	Properties of each study, such as its bases, parameters and style. See Changing the Properties of Inserted Studies on page 309.

You can find more details about customizing charts in the section on charting: See Customizing the Chart on page 216.

For more information, see Chart on page 52.

Customizing the General Chart Properties

The group **General** contains the settings that apply to the whole chart, such as the appearance of the time scale or the data compression of the chart.

Property Sheet	Description
Time Region	Change the amount of data displayed in the chart. See Changing the Amount of Data Displayed in the Chart on page 217
Type	Change the data compression of the chart. See Changing the Data Compression on page 175
H.Scale	Change the font of the time scale. See Changing the Font and Colors of the Time Scale on page 232
> Fill Type	Change the background color of the time scale. See Changing the Font and Colors of the Time Scale on page 232
Misc.	Change the color of bookmarks, the header transparency and remove trailing zeros on the price scale. See Setting, Moving and Editing Bookmarks on page 208, Changing the Font, Colors and Data of Headers on page 227 and Changing the Price Display of the Price Scale on page 230

Customizing the Chart Pane Properties

The property sheets that apply to certain panes (for example **Pane 1**, **Pane 2** etc.) contain only settings that apply to a specific chart pane, or to an object inside a chart pane. Depending on what objects and panes you use in your chart, different property sheets will be available here.

Property Sheet	Description
Grid	Change the appearance of the grid lines. See Changing the Style and Colors of the Grid on page 226
V.Scale	Change the font of the price scale. See Changing the Font and Colors of Price Scales on page 231
> Type	Change the type of the price scale. See Changing the Price Display of the Price Scale on page 230
> Label	Change the last price label. See Changing the Labels on Price Scales on page 231
> Fill Type	Change the background color of the price scale. See Changing the Font and Colors of Price Scales on page 231
> Scale	Change the vertical scaling of the time series. See Changing the Scaling of the Price Scale on page 229
Second V.Scale	Change the font of the second price scale. See Changing the Font and Colors of Price Scales on page 231

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> Label	Change the last price label of the second price scale. See Changing the Labels on Price Scales on page 231
> Fill Type	Change the background color of the second price scale. See Changing the Font and Colors of Price Scales on page 231
Header	Change the font of the header. See Changing the Font, Colors and Data of Headers on page 227
> Fill Type	Change the background color of the header. See Changing the Font, Colors and Data of Headers on page 227
> Data	Change the data displayed in the header. See Changing the Font, Colors and Data of Headers on page 227
[Symbol Ticker]	Properties of each displayed symbol (time series), such as the chart type, line style, color coding of bars and trading sessions. See Customizing Symbol / Time Series Properties on page 105
[Drawing Object Name]	Properties of each drawing object, such as the line style, auto-hide options and optional parameters. See Customizing Drawing Objects on page 270
Hidden Objects	Change the settings for chart objects (symbols, drawing objects, studies etc.) that are currently hidden on the chart. See also Customizing Chart Objects on page 233

Customizing Symbol / Time Series Properties

Each displayed symbol (time series) can be customized per pane. You can decide how the data is plotted on the screen (for example, as a line chart, bar chart, point and figure chart or else), what style and colors are used in the chart and what trading sessions are used in intraday charts.

Property Sheet	Description
Display	Change the chart type of the time series. See Changing the Chart Type on page 176
Line Style	Change the line style and color coding of the time series. See Changing the Line Style on page 219 and Color-Coding Price Relations, Intervals or Trends on page 220
Price Display	Display price lines at the level of the current price. See Showing Price Lines at the Level of Current Prices on page 222
Trading Sessions	Change the trading sessions for the symbol. See Changing the Amount of Data Displayed in the Chart on page 217 and Color-Coding Price Relations, Intervals or Trends on page 220

Customizing News

For a news document, you can customize the following settings in the **News Properties** dialog:

Property Sheet	Description
Filter	Set a services, keywords, categories or range filter for news stories
View	Change the font of the news document, its foreground and background colors, and the data that is displayed in news headlines

Additionally, you can choose if headlines and/or stories are displayed in the news document, navigate between news stories, and search for a word or phrase in news headlines or stories.

For more information, see News on page 53.

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Showing and Hiding News Headlines and Stories

The news window shows news headlines and stories in a combined view by default. You can however also show only the news headlines, or only the news stories.

To show or hide news headlines and stories

- Click on the appropriate icon on the **News** toolbar:

	Headlines Only	Show only the news headlines
	Headlines and Story	Show both news headlines and stories
	Story Only	Show only the news story

News headlines

When you are using the view **Headlines Only**, you can still display the entire news story in a separate window. You can also choose which columns of headline data should be displayed, and whether to display the column headers.

To open a news story in a separate window

- Double-click a news headline, or
- Right-click a news headline and choose **Open**.

To show or hide the different columns of news headlines

- Click on the appropriate icon on the **News** toolbar:

	Display Source	Show / hide the **Services** column of a headline
	Display Date	Show / hide the **Date** column of a headline
	Display Time	Show / hide the **Time** column of a headline
	Display Key	Show / hide the **Story no.** column of a headline

Note See also Changing Font, Colors and Headline Data of News on page 107.

To show or hide the headers of news headline columns

- Right-click a news headline and choose **Show Column Headers**.

News stories

When you are using the view **Story Only**, you can still navigate to different news stories from the toolbar.

To navigate between news stories

- Click on the appropriate icon on the **News** toolbar:

	Last Story Received	Jump to the latest news story
	Previous Story	Jump to the previous news story
	Next Story	Jump to the next news story

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Changing Font, Colors and Headline Data of News

You can change the font of all text that is displayed in a news document (headlines and news stories), the data that is displayed in the headline of a news story, the color of the text and the background color of the news document on the **View** property sheet of the **News Properties** dialog.

> **Note** For showing / hiding individual headline columns, see also Showing and Hiding News Headlines and Stories on page 106.

To change the font, colors and headline data of a news document

- Right-click in the news document and select **Properties**.
- On the left side of the dialog, select **View**.
- On the right side of the dialog, adapt the default settings to your needs.
- You can see a preview for your settings in the **Preview** window at the bottom of the dialog.

Control	Description
Font	Type of font used for all text in the news document
Font Size	Size of the font used for all text in the news document
Bold	Check to apply a bold font to all headline text
Foreground	Color of the text
Background	Background color of the news document
Breaking News	Color of breaking news (also marked with * in the headline)
Source	Check to display the **Services** column of a headline
Key	Check to display the **Story no.** column of a headline
Date	Check to display the **Date** column of a headline
Time	Check to display the **Time** column of a headline

Filtering News Stories

You can filter the news stories that are shown in a news document by news service, category, keyword or range. With a *services filter*, you can display only news stories that were sent by specific news services. With a *category filter*, you can display only news stories that have the categories that you select. With a *keyword filter*, you can search for specific words that appear in the text of a news story. With a *range filter*, you can define how many headlines will be displayed in the news document, or choose a specific time period for the displayed news headlines.

> **Note** The filters you set here will also be applied when you perform a quick keyword search by simply typing your search term into the news document. See Quick Keyword Search in News on page 110.

To filter news stories

- Right-click in the news document and select **Properties**.
- On the left side of the dialog, select **Filter**.
- In the **Services** section on the right side of the dialog, select the news services that you want to include.

> **Note** You can click **Select All** to include all news services, or **Deselect All** to include no news service.

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- In the **Categories** section, select the categories that you want to include.
- In the **Keyword Filter** section, enter your search terms in the **Search for** field. Keywords will be highlighted in the news document.

> **Note** If you want to search only for the exact term / phrase that you entered, select the **Match whole word only** checkbox.
> If you want to search for the keyword only in headlines (not in the text of the news stories), select the **Find in Headlines** checkbox.
> If you want to display breaking news only, enter ***** as the keyword.

- In the **Range** section, choose the range / time period for the displayed news headlines:

Last...	Choose the relative time period for which you want to display news, for example **Last 3 hours**
Records	Enter the number of headlines that you want to see
Period (from-to)	Choose an exact time period for which you want to display news (start and end date / time)

> **Note** There is a maximum of 1000 news headlines that can be displayed in one news document. This limit also applies when filtering by date/time. Older headlines might not be shown, even if they match your filter criteria.

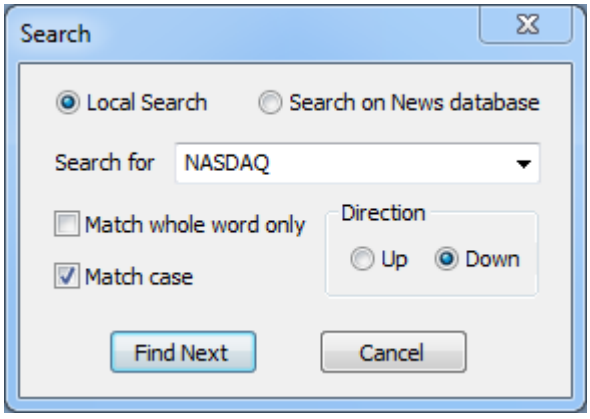
Searching for Keywords in News

You can search for keywords or phrases in news headlines or news stories currently displayed in the news document, in the news story that is active at the moment, or search the whole news database.

> **Note** If you want to get an automatic notification whenever a keyword or phrase shows up in a news story, use alerts: See News Alerts on page 325.

To search for a word in all loaded news headlines (local search)

- Click on a news headline.
- Click on the **Find** icon in the **News** toolbar:
- Click on the **Local Search** radio button.
- Enter your search terms in the **Search for** field.



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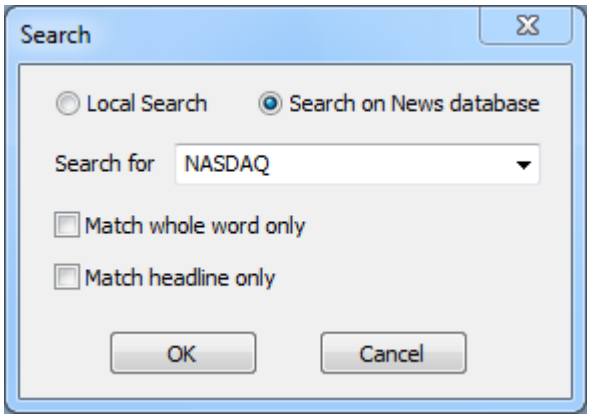
- Choose in which direction you want to search first: **Up** searches the headlines above the current headline, **Down** searches the headlines below.
- If you want to search only for the exact term / phrase that you entered, select **Match whole word only**.

> **Note** When you activate this option, for example a search for the term "market" will only find news headlines that contain this exact word. News headlines that contain these letters as part of another word ("marketing", "markets", "marketwatch" etc.) will not be displayed.

- If your search terms are case-sensitive, select **Match case**.
- Click **Find Next** to highlight the next match.

To search for a word in all available news headlines and stories (news database)

- Click on a news headline.
- Click on the **Find** icon in the **News** toolbar:
- Click on the **Search on News database** radio button
- Enter your search terms in the **Search for** field.



- If you want to search only for the exact term / phrase that you entered, select **Match whole word only**.
- If you want to search for the keyword only in headlines (not in the text of the news stories), select the **Match headline only** checkbox.
- Click **Ok** to search for news and highlight all matches.

To search for a word in a specific news story

- Click on the news story.
- Click on the **Find** icon in the **News** toolbar:

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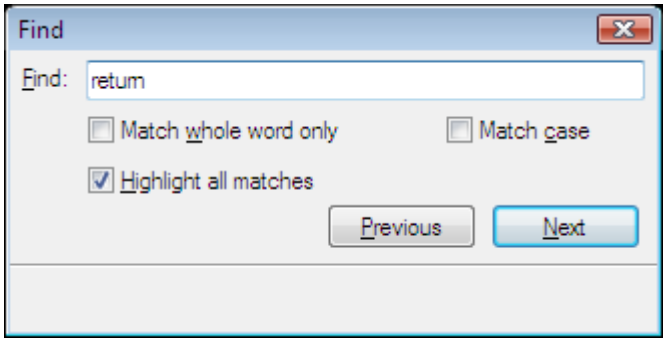
- Enter your search term in the **Find** field.



- If you want to search only for the exact term / phrase that you entered, select **Match whole word only**.
- If your search terms are case-sensitive, select **Match case**.
- If you want to see all matching terms in the news story at once, select **Highlight all matches**.
- Click **Previous** or **Next** to jump to the preceding / following match.

Quick Keyword Search in News

Quick keyword search lets you search for keywords in the news database more easily. You just type your search term over the active news document, and TeleTrader Professional performs a search for this keyword in the whole news database, using the current filter settings from the **News Properties** dialog, including the currently set range (see Filtering News Stories on page 107). When you want to return to the original state of the news document (and clear the search terms you entered) you can easily reset the news document.

To search for a word in the news database using quick keyword search

- Make sure that the news document is open and active.
- Type your search term, for example **DJI**.
- Press the ENTER key.
- The search is performed for the keyword **DJI** using the option **Match whole word only**. All news stories that contain the keyword **DJI** and comply to the currently filter settings from the **News Properties** dialog (services, categories and range filters) are displayed.

To reset the news document and clear the previous keyword search

- Click the **Clear news search** icon on the **News** toolbar , or press the HOME key.

Customizing Market Depth

For a market depth document, you can customize the following settings in the **Market Depth Properties** dialog:

Property Sheet	Description
Price View	Add, remove and rearrange the columns of the price view
> Update	Assign an update style to specific columns in the price view
> Grid	Change the appearance and color of the grid in the price view
> Font	Change the font of the price view and its foreground and background color
Market Depth	Change the number of depth levels shown and choose their colors
> Summary View	Add, remove and rearrange the columns of the summary view
> Graph View	Change the background color, graph orientation and separation line for the graph view

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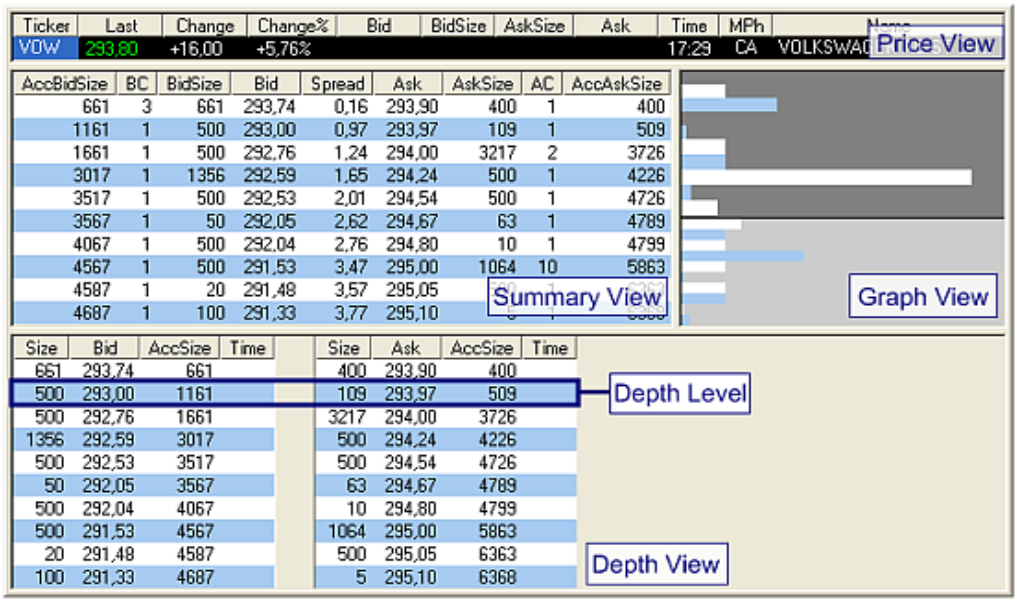
> Depth View	Add, remove and rearrange the columns of the depth view
> Filter	Set a price or size filter for the market depth document

For more information, see Market Depth on page 55.

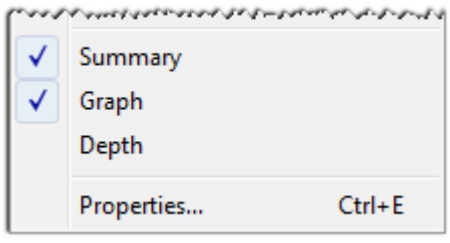
Showing and Hiding Views

A market depth document consists of four views: price view, summary view, graph view and depth view. Apart from the price view, which is always visible, the other views can be shown or hidden.



To show and hide views in a market depth document

- Right-click on the market depth document.
- Click on a view to show or hide it.
- All visible views are highlighted with a check mark:



To resize the view of a market depth document

- Place the mouse pointer on the separation line between two views. The mouse pointer changes:

- Hold the mouse button down and move the mouse to widen / shorten the view.

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Note You cannot resize the price view.

Customizing the Price View

The price view displays the inside market quote for the symbol (highest bid and lowest ask price) in columns – think of it as a price page with only one symbol. It can be customized in the same way as a price page or watch list: You can insert and rearrange columns, change the update style of a column and customize font, colors and grid lines in the **Market Depth Properties** dialog.

To add columns to and remove them from the price view

- Right-click in the price view and select **Properties**.
- On the left side of the dialog, select **Price View**.
- On the right side of the dialog, add and remove columns like you would in a price page.

For detailed instructions, see Adding and Removing Columns on page 80.

To rearrange and resize the columns of the price view

- Right-click in the price view and select **Properties**.
- On the left side of the dialog, select **Price View**.
- On the right side of the dialog, move columns up and down like you would in a price page.

For detailed instructions, see Rearranging and Resizing Rows and Columns on page 81.

To change the update style for the columns of the price view

- Right-click in the price view and select **Properties**.
- On the left side of the dialog, select **Price View > Update**.
- On the right side of the dialog, change the update styles like you would in a price page.

For detailed instructions, see Changing the Update Style of a Column on page 83.

To change the grid style of the price view

- Right-click in the price view and select **Properties**.
- On the left side of the dialog, select **Price View > Grid**.
- On the right side of the dialog, change the grid style like you would in a price page.

For detailed instructions, see Changing the Grid Style on page 84.

To change font and colors of the price view

- Right-click in the price view and select **Properties**.
- On the left side of the dialog, select **Price View > Font**.
- On the right side of the dialog, change font and colors like you would in a watch list.

For detailed instructions, see Changing Font and Colors on page 133.

Customizing the Summary View

The summary view shows a table with a summary of all orders that are visible in the market, grouped by depth level. The best bids and asks are displayed at the top. You can see the bid / ask prices of each level, the calculated spread, the number and accumulated size of the orders at this level, and the accumulated size of orders over all levels.

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To add columns to and remove them from the summary view

- Right-click in the summary view and select **Properties**.
- On the left side of the dialog, select **Market Depth > Summary View**.
- On the right side of the dialog, add and remove columns like you would in a price page.

For detailed instructions, see Adding and Removing Columns on page 80.

To rearrange and resize the columns of the summary view

- Right-click in the summary view and select **Properties**.
- On the left side of the dialog, select **Market Depth > Summary View**.
- On the right side of the dialog, move columns up and down like you would in a price page.

For detailed instructions, see Rearranging and Resizing Rows and Columns on page 81.

Available columns in summary view

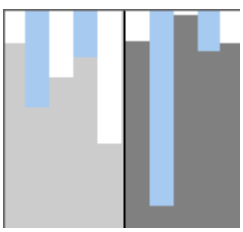
Column	Description
BC	BidCount: The number of orders for this bid price level
AccBidSize	Accumulated size of all buy orders – this is the running total of the **BidSize**
BidSize	Size of the buy orders for this bid price level
Bid	Bid price
Spread	Difference between the bid / ask pair on this level
Ask	Ask (offer) price
AskSize	Size of the sell orders for this ask price level
AccAskSize	Accumulated size of all sell orders – this is the running total of the **AskSize**
AC	AskCount: The number of orders for this ask price level

Customizing the Graph View

The graph view visualizes the data displayed in the summary view. Each bar represents a depth level. The length (or height) of the bar represents the size of the orders at this depth level. The bars can be displayed vertically (ask bars are shown in the right part) or horizontally (ask bars are shown in the top part).

To change the graph orientation

- Right-click in the summary view and select **Properties**.
- On the left side of the dialog, select **Market Depth > Graph View**.
- On the right side of the dialog, select **Vertical** or **Horizontal**.



Vertical graph

Horizontal graph

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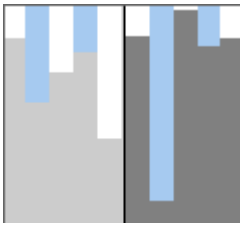
Separation of the graph into bid and ask sections

The graph view is divided into two sections: The *ask* section (top or right part) and the *bid* section (bottom or left part). The background color for each section can be set individually. You can also choose if you want the two sections to take up the same amount of space (fixed separation line), or if you want to see which side has more orders with a floating separation line.

The *floating separation line* is enabled by default – the sections are then sized according to the accumulated size of orders on the bid or ask side. For example, if you have an accumulated bid size of 600, and an accumulated ask size of 400, the bid section will take up 60 percent of the available space in the graph view, and the ask side will take up 40 percent. The widths of the bars are then adjusted to the available space. When you see wider bars on the bid side, for example, this means that at the moment, there are more buyers in the market.



Fixed separation line

Floating separation line

To change the background colors of the bid and ask sections

- Right-click in the graph view and select **Properties**.
- On the left side of the dialog, select **Market Depth > Graph View**.
- On the right side of the dialog, choose a background color for the **Ask** section (top part in horizontal graph view, right part in vertical graph view) and for the **Bid** section (bottom part in horizontal graph view, left part in vertical graph view).

To set a fixed separation line between the bid and ask section

- Right-click in the graph view and select **Properties**.
- On the left side of the dialog, select **Market Depth > Graph View**.
- On the right side of the dialog, select the **Fix separation line** check box.

Customizing the Depth View

The depth view shows all bids and asks side by side. The best bids and asks are displayed at the top. This view is hidden by default – to display it, see Showing and Hiding Views on page 111.

To add columns to and remove them from the depth view

- Right-click in the depth view and select **Properties**.
- On the left side of the dialog, select **Market Depth > Depth View**.
- On the right side of the dialog, add and remove columns like you would in a price page.

For detailed instructions, see Adding and Removing Columns on page 80.

> **Note** The depth view offers similar columns as the summary view, plus an additional column **Source** that shows the market participant ID of the respective bid / ask.

To rearrange and resize the columns of the depth view

- Right-click in the depth view and select **Properties**.

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- On the left side of the dialog, select **Market Depth > Depth View**.
- On the right side of the dialog, move columns up and down like you would in a price page.

For detailed instructions, see Rearranging and Resizing Rows and Columns on page 81.

Setting the Maximum Number and Colors for the Depth Levels in Market Depth

In the summary view, graph view and depth view of a market depth document, you can see different depth levels. You can set how many depth levels you want to display, and you can assign a color to each depth level.

> **Note** Changing these settings will affect all views except the price view.

To set the maximum number of depth levels in market depth

- Right-click in the market depth document and select **Properties**.
- On the left side of the dialog, select **Market Depth**.
- On the right side of the dialog, select the **Maximum Depth** checkbox.
- Enter the maximum number of depth levels to be displayed.

To set the colors for the depth levels in market depth

- Right-click in the market depth document and select **Properties**.
- On the left side of the dialog, select **Market Depth**.
- On the right side of the dialog, enter the number of different colors you want to use in the **Number of colors** field.
- In the **Colors** section, click on the depth level for which you want to set the color. The label on the right shows the selected level.
- Choose the color for this level.
- Click on each other level for which you want to set the color, and choose a color for it.

Filtering Information in Market Depth

You can filter the information that is shown in market depth by the price or size of the orders shown. With a *price filter*, you can display only orders with prices inside a certain range that you define. With a *size filter*, you can do the same for order sizes.

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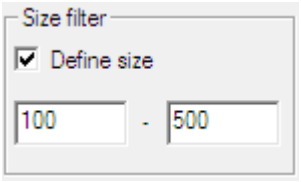
To filter the information shown in market depth

- Right-click in the market depth document and select **Properties**.
- On the left side of the dialog, select **Depth View > Filter**.
- On the right side of the dialog, select the **Define prices** check box to set a price filter.
- In the **Prices filter** section, enter the lower and upper boundaries for the price range that you want to display in market depth.

- Select the **Define size** check box to set a size filter.
- In the **Size filter** section, enter the lower and upper boundaries for the size range that you want to display in market depth.



Note You can also see a **Brokers filter** in the dialog. This function is not available at the moment.

Customizing Time and Sales

For a time and sales document, you can customize the following settings in the **Time and Sales Properties** dialog:

Property Sheet	Description
Symbols	Add and remove symbols, assign colors to individual symbols
Price Page	Add, remove and rearrange the columns of the price page view
> Update	Assign an update style to specific columns in the price page view
> Grid	Change the appearance and color of the grid in the price page view
> Font	Change the font of the price page view and its foreground and background color
Time & Sales	Add, remove and rearrange the columns and fields of the time and sales view
> Time Region	Change the amount of data that is displayed in time and sales
> Grid	Change the appearance and color of the grid in the time and sales view
> Font	Change the font of the time and sales view and its foreground and background color
> Filter	Set a price or size filter for time and sales data

Additionally, you can decide if you want to show the market activity of one symbol or of several symbols, show / hide the different views of the document, add sheets and temporarily freeze the time and sales view. You can also link other documents to a time and sales documents, and show chain symbols (symbol lists) in time and sales.

For more information, see Time and Sales on page 56.

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Showing Data for a Single Symbol or Multiple Symbols in Time and Sales

For every time and sales document, you can choose whether to display only the market activity for a single symbol, or all trades, bids and asks for multiple symbols. This means that you can display time and sales data for many symbols in one document. The list of symbols is displayed in the price page view (see Showing and Hiding Views on page 117). You can either switch between the symbols, which means that you can show only the time and sales data for one selected symbol at a time, or you can show all time and sales data simultaneously (this is especially useful for infrequently traded securities).

> **Note** In time and sales documents that contain a chain symbol, you cannot show data for a single symbol. See also Displaying Chain Symbols in Time and Sales on page 124.

To show time and sales data for all / selected symbols

- Right-click in the time and sales view and select **Show all Symbols** or **Show Selected Symbol**.
- The row headers of the price page view will show a red arrow when only the time and sales data for the selected symbol is displayed.

> **Note** You can also double-click any row header in the price page view to switch between these options.

Showing and Hiding Views

A time and sales document consists of two views: the price page view and the time and sales view. You can choose which of the views you want to show. You can also freeze the time and sales view temporarily, which means that no new records will be loaded until you unfreeze the view.

> **Note** In time and sales documents that contain a chain without a main symbol, the price page view is hidden automatically and cannot be shown. See also Displaying Chain Symbols in Time and Sales on page 124.

To show and hide views in a time and sales document

- Right-click on the time and sales document.

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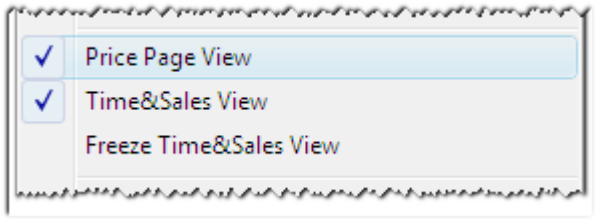
- Click on a view to show or hide it.
- All visible views are highlighted with a check mark:



To resize the view of a time and sales document

- Place the mouse pointer on the separation line between the two views. The mouse pointer changes:

- Hold the mouse button down and move the mouse to widen / shorten the view.

To freeze the time and sales view

- Click the **Play** / **Pause** icon in the upper left corner of the time and sales view:

	The **Play** icon indicates that time and sales is showing new data as it comes in. Click to freeze the time and sales view.
	The **Pause** icon indicates that the data stream in the time and sales view is temporarily stopped. Click to unfreeze the time and sales view.

- Alternatively, you can also right-click on the time and sales document and choose **Freeze Time & Sales View**. To unfreeze the time and sales view, right-click and choose **Freeze Time & Sales View** again.

Adding and Removing Symbols in Time and Sales

You can add symbols to the price page view of time and sales documents or remove them from the document.

> **Note** In time and sales documents that contain a chain symbol, you cannot add or remove symbols manually. See also Displaying Chain Symbols in Time and Sales on page 124.

To add a symbol to a time and sales document

- Right-click in the time and sales document and select **Properties**.
- On the left side of the dialog, select **Symbols**.
- On the right side of the dialog, click **Add**.
- In the **Symbol Search** dialog, enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol(s) that you want to insert.
- Click **OK**. The symbol is inserted into the **Symbols** list.

You can also insert symbols like in other multi-symbol documents: See Inserting Symbols on page 74.

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To remove a symbol from a time and sales document

- Right-click in the time and sales document and select **Properties**.
- On the left side of the dialog, select **Symbols**.
- On the right side of the dialog, select the symbol from the **Symbols** list.
- Click **Remove**.

You can also remove symbols like in other multi-symbol documents: See Removing Symbols on page 76.

Assigning Colors to Individual Symbols

You can assign a different color to every symbol of a time and sales document. This color is used for the symbol in both views (price page view and time and sales view).

Name	Time	Last	Change	Vol	Bid	A
ANDRITZ AG	17:01	17,42	-1,53	281927	17,42	17,
ERSTE GROUP BANK AG	17:01	7,69	+0,16	1633296	7,66	7,
FLUGHAFEN WIEN AG	17:01	19,75	+0,33	39427	19,74	19,
OMV AG	17:01	20,90	+0,60	815543	20,85	20,
TELEKOM AUSTRIA AG	17:00	10,29	+0,31	1205090	10,27	10,

Date	Time	Last	VolLast	Bid	BidSize	AskSize	Ask
09.03.2009	17:00:40					100	20,88
09.03.2009	17:00:40			20,85	500		
09.03.2009	17:00:40					100	20,88
09.03.2009	17:00:38			10,27	1728		
09.03.2009	17:00:38					3090	10,28
09.03.2009	17:00:38			10,27	1728		
09.03.2009	17:00:38					3090	10,28
09.03.2009	17:00:36			7,66	4277		
09.03.2009	17:00:36					1035	7,69
09.03.2009	17:00:36			7,66	4277		
09.03.2009	17:00:36					1035	7,69
09.03.2009	17:00:35			10,27	1728		

Note All symbols to which no colors have been assigned will be shown with the default colors defined under **Price Page > Font** and **Time & Sales > Font**.

To assign colors to a symbol

- Right-click in the time and sales document and select **Properties**.
- On the left side of the dialog, select **Symbols**.
- On the right side of the dialog, select the symbol from the **Symbols** list.
- Select the **Foreground** check box, and choose a text color for this symbol.
- Select the **Background** check box, and choose a background color for this symbol.

Changing the Number of Decimal Places

You can change the number of decimal places that is used for a specific column in time and sales, or for the selected symbol in all documents.

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To change the number of decimal places for a time and sales column

- Right-click the column header and choose **Set decimal places**.
- In the **Set decimal places** dialog, enter the number of decimal places that you want to use for the selected column.

To change the number of decimal places for a symbol

- Right-click in the time and sales view and choose **Set decimal places**.
- In the **Set decimal places** dialog, enter the number of decimal places that you want to use for the selected symbol.

> **Note** The custom decimal places will be used for this symbol in all documents (charts, time and sales, market depth, options matrix, quick quote, price pages etc.). You can also change this setting under **Tools > Options > General > Subscription** (see Subscription Settings on page 339).

Changing the Grid Style, Font and Colors of the Time and Sales View

You can customize font, colors and grid lines in the time and sales view in the same way as in a price page or watch list.

To change the grid style of time and sales

- Right-click in the time and sales view and select **Properties**.
- On the left side of the dialog, select **Time & Sales > Grid**.
- On the right side of the dialog, change the grid style like you would in a price page.

For detailed instructions, see Changing the Grid Style on page 84.

To change font and colors of time and sales

- Right-click in the time and sales view and select **Properties**.
- On the left side of the dialog, select **Time & Sales > Font**.
- On the right side of the dialog, change font and colors like you would in a watch list.

For detailed instructions, see Changing Font and Colors on page 133.

Adding and Removing Columns in the Time and Sales View

You can add, remove or edit the columns shown in the time and sales view. If you are using different sheets, you can configure time and sales to show different columns on each sheet.

To add columns to the time and sales view

- Right-click in the time and sales view and select **Properties**.

> **Note** You can also right-click on the tab of a sheet and choose **Edit Columns** instead.

- In the **Time and Sales Properties** dialog, select the column after which the new column should appear in the **Displayed Columns** list.
- Select the data field that you want to use as the base for the new column from the **Available Fields** list.

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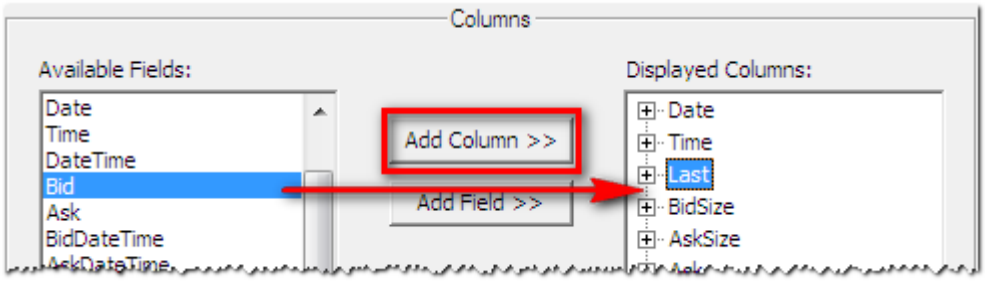
- Click **Add Column**.

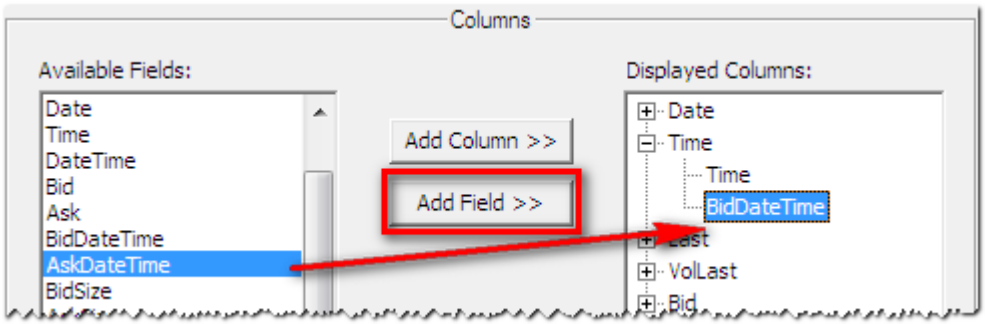


- The new column is shown in the **Displayed Columns** list. It automatically has the name of the chosen data field, and the field is added to the column.

To add fields to a time and sales column

> **Note** A time and sales column displays data from one or more data fields. This is often useful for columns such as **Date**, where either the field **Date** (for trades), **BidDateTime** (for buy orders) or **AskDateTime** (for sell orders) is shown.

- Right-click in the time and sales view and select **Properties**.
- In the **Time and Sales Properties** dialog, select the column where you want to add a new field in the **Displayed Columns** list.
- Select the data field that you want to add from the **Available Fields** list.
- Click **Add Field**.



- The field is added to the chosen column in the **Displayed Columns** list.

To remove fields or columns from the time and sales view

- Right-click in the time and sales view and select **Properties**.
- In the **Time and Sales Properties** dialog, select the column or field that you want to remove from the **Displayed Columns** list.
- Click **Remove**.

To edit column names

- Right-click in the time and sales view and select **Properties**.
- In the **Time and Sales Properties** dialog, select a column in the **Displayed Columns** list.
- Click **Edit**.
- Enter a new name for the column and press the ENTER key.

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To rearrange and resize the columns of the time and sales view

- To *rearrange* the columns of the time and sales view, click on the column header and drag the column to its new position.
- To *resize* the width of a column in the time and sales view, place the mouse pointer between two columns, hold the mouse button down and move the mouse to widen / shorten the column.

To add sheets to the time and sales view

Like a price page, the time and sales view consists of at least one sheet. You can add additional sheets to create different time and sales views for a document. Each sheet can be customized independently – that means it can use different columns, colors and fonts (see Changing the Grid Style, Font and Colors of the Time and Sales View on page 120). You cannot define different **Time Region** settings for the sheets, though – this setting will be the same in the whole document.

For more information about how to create new sheets, rename or remove a sheet, see the information about sheets in price pages: Adding and Organizing Sheets on page 87.

Note You cannot move symbols from one time and sales sheet to another like you can in price pages.

Changing the Amount of Data Displayed in Time and Sales

You can change the amount of data that is displayed in a time and sales document. You can display more data, less data, or data from a specific time period (that means, historical time and sales data).

Note Be aware that Professional needs more system resources the more data you load in time and sales. If you don't need older time and sales data, keep the default setting.

To change the amount of data displayed in time and sales

- Right-click in the time and sales document and select **Properties**.
- On the left side of the dialog, select **Time & Sales > Time Region**.
- On the right side of the dialog, choose the appropriate option.

All	All available time and sales data is loaded and displayed in the time and sales document.
Last x days	Time and sales data for the last x days is displayed. Enter the number of days.
Records	The last x records (rows) are displayed. Enter the number of records. The default setting is 50 records (rows). **Note** In time and sales documents that contain a chain symbol, historical data is not loaded when opening the document. Time and sales data is only shown as it comes in. See also Displaying Chain Symbols in Time and Sales on page 124.
Period (from-to)	Time and sales data for a specific time period is displayed. Choose the begin and end date and time of the period. You can use this option to display historical time and sales data.

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Filtering Information in Time and Sales

You can filter the information that is shown in time and sales by the price or the volume / size of the trades / orders. With a *price filter*, you can display only data with prices inside a certain range that you define. With a *size filter*, you can do the same for trade volume / order sizes.

To filter the information shown in time and sales

- Right-click in the time and sales document and select **Properties**.
- On the left side of the dialog, select **Filter**.
- On the right side of the dialog, select the appropriate filtering option.
- Enter the lower and upper boundaries for the price or size range that you want to display in time and sales.

Price Filter

Last price	Set a filter for trades (column **Last**)
Bid price	Set a filter for Bid prices
Ask price	Set a filter for Ask prices

Size Filter

Trade volume	Set a filter for trade volume (column **VolLast**)
Bid size	Set a filter for Bid size
Ask size	Set a filter for Ask size

Customizing the Price Page View

The price page view can be customized in the same way as a price page: You can insert and rearrange columns, change the update style of a column and customize font, colors and grid lines in the **Time and Sales Properties** dialog.

To add columns to and remove them from the price page view

- Right-click in the price page view and select **Properties**.
- On the left side of the dialog, select **Price Page**.
- On the right side of the dialog, add and remove columns like you would in a price page.

For detailed instructions, see Adding and Removing Columns on page 80.

To rearrange and resize the columns of the price page view

- Right-click in the price page view and select **Properties**.
- On the left side of the dialog, select **Price Page**.
- On the right side of the dialog, move columns up and down like you would in a price page.

For detailed instructions, see Rearranging and Resizing Rows and Columns on page 81.

To change the update style for the columns of the price page view

- Right-click in the price page view and select **Properties**.
- On the left side of the dialog, select **Price Page > Update**.
- On the right side of the dialog, change the update styles like you would in a price page.

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For detailed instructions, see Changing the Update Style of a Column on page 83.

To change the grid style of the price page view

- Right-click in the price view and select **Properties**.
- On the left side of the dialog, select **Price Page > Grid**.
- On the right side of the dialog, change the grid style like you would in a price page.

For detailed instructions, see Changing the Grid Style on page 84.

To change font and colors of the price page view

- Right-click in the price view and select **Properties**.
- On the left side of the dialog, select **Price Page > Font**.
- On the right side of the dialog, change font and colors like you would in a price page.

For detailed instructions, see Changing Font and Colors on page 85.

Linking Documents to Time and Sales

In the same way as you can link charts, news, options matrix and market depth documents to a price page, you can also link them to the price page view of a time and sales document. Whenever you select a new symbol in the price page view of a time and sales document, all linked documents will also display this symbol.

For more information on linking charts, news, options matrix, market depth and quick quote documents to a time and sales document, see Linking Documents to a Price Page on page 89. The linking process is the same for price pages, watch lists and time and sales documents.

> **Note** Time and sales documents that contain a chain symbol cannot be linked to other documents. See also Displaying Chain Symbols in Time and Sales on page 124.

Row highlight mode in time and sales

The row highlight mode in time and sales documents is indicated by a red arrow in the row header of the active row in the price page view. In highlight mode, you can switch between symbols in linked documents by clicking on a symbol in the price page view or using the arrow keys of your keyboard.

In addition, the row highlight mode also means that only time and sales data for the selected symbol is shown in the time and sales view of the document. This means that by using the row highlight mode, you show only data for the selected symbol, both inside the time and sales document and in all linked documents. See also Showing Data for a Single Symbol or Multiple Symbols in Time and Sales on page 117.

Displaying Chain Symbols in Time and Sales

Apart from "normal" symbols, time and sales documents can also display so-called *chain symbols*. This is a special symbol type that is in essence a pointer to a list of normal symbols of different types, usually a list of index constituents. The list of symbols contained in a chain is automatically updated on the server. This means that when for example some new stocks are added to the list of index constituents, the list of symbols will be automatically updated in the time and sales document.

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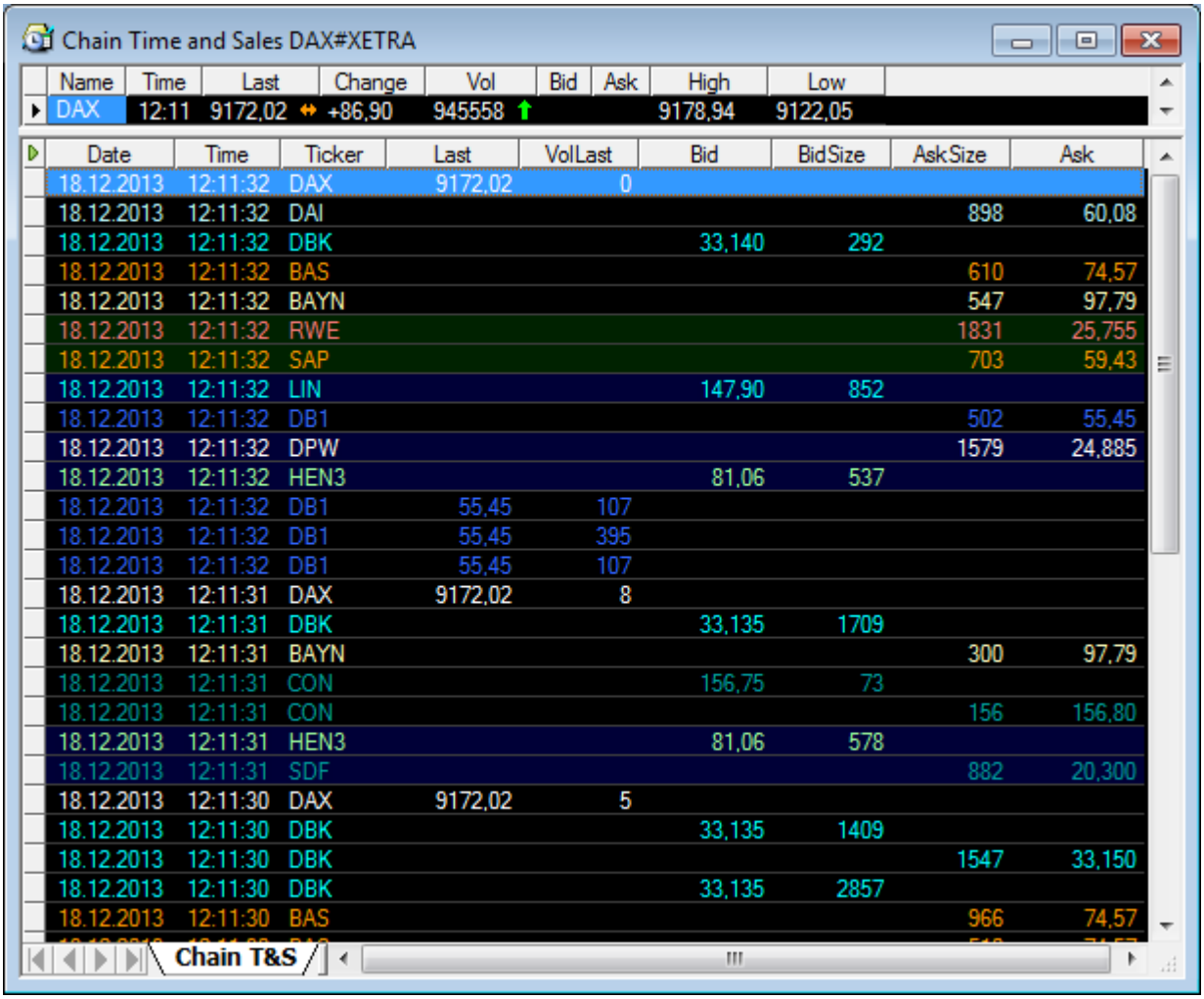
Chain symbols can also hold a so-called *main symbol*. This symbol is usually an index symbol (if the chain holds a list of index constituents). The main symbol is shown in the price page view of time and sales – in contrast to normal multi-symbol time and sales documents, the list symbols are not displayed there. The name of the chain symbol is shown in the title of the time and sales documents – chain symbol names typically contain with a pound sign (for example, DAX#XETRA or INDU#US).



Note Some chains do not contain a main symbol. In that case, the price page view is automatically hidden and cannot be shown.

To open a chain symbol in time and sales

- Use Symbol Search to find and open a specific chain symbol: See Opening Symbols from the Search Results on page 38.
- Type the ticker or name of a chain symbol into a time and sales document (Smart Symbol Search) to replace all symbols that are currently visible in time and sales with the chain: See Calling Symbol Search from a Document on page 41.
- Open a chain symbol that was stored in FastLook: See Opening Symbols from FastLook on page 167.

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Different behavior in comparison to normal multi-symbol time and sales documents

Showing chain symbols in a time and sales document seems similar to using a normal multi-symbol time and sales document. However, there are some differences in the behavior of time and sales documents when they contain a chain symbol:

	Normal multi-symbol time and sales document	Time and sales document with chain symbol
Adding / removing symbols	You can manually add or remove symbols. See also Adding and Removing Symbols in Time and Sales on page 118	The symbol list is loaded automatically from the server, and also updated automatically. You cannot add or remove symbols manually.
Initial loading of historical data	When you open the document, the latest historical data is automatically loaded from the market data server according to the settings under **Properties > Time&Sales > Time Region**. See also Changing the Amount of Data Displayed in Time and Sales on page 122	When the time region is set to **Records**, no historical data is loaded when opening the document. New time and sales data is shown as it comes in, up until the maximum set in **Properties** (by default, last 50 records). For all other time region settings, loading of historical data works the same as in normal time and sales documents.
Price page view	The price page view shows all symbols that have been added to the document. You can show or hide the price page view. See also Showing and Hiding Views on page 117	The price page view shows the main symbol of the chain. If the chain does not contain a main symbol, the price page view is automatically hidden and cannot be shown.
Showing market activity for a only single symbol	You can show data for a single symbol or for all symbols in the time and sales view of the document. See also Showing Data for a Single Symbol or Multiple Symbols in Time and Sales on page 117	You cannot show data for a single symbol. The command **Show Selected Symbol** is disabled.
Linking of documents	You can link other documents, like charts, to the price page view of the time and sales document. See also Linking Documents to Time and Sales on page 124	You cannot link other documents to the time and sales document.

Note

When you drag and drop a new (normal) symbol to a time and sales document that currently displays a chain, Professional automatically suggests breaking the connection with the chain symbol.

The following message is shown in that case: **This operation will break the connection with the chain symbol for this document. Lists will no longer be updated. Do you want to continue?**

Click **Yes** to turn off automatic list updates and add the new symbol to the document. The document will now behave like a normal multi-symbol time and sales document, which means that the symbol list is not automatically updated anymore when there are changes to the chain.

Click **No** to keep automatic lists updates turned on and cancel the adding of the new symbol. The list of symbols which are part of the chain is now still automatically managed on the server. New symbols are added to the chain, other symbols are removed from the chain in regular intervals. If you display a chain symbol in time and sales, the symbol list will be automatically updated after a server-side change. This means that for example you'll always get the current list of index constituents for the DAX#XETRA or INDU#US index chain.

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Customizing Options Matrix

For an options matrix document, you can customize the following settings in the **Options Matrix Properties** dialog:

Property Sheet	Description
Underlying	Add, remove and rearrange the columns of the underlying view
> Update	Assign an update style to specific columns in the underlying view
> Grid	Change the appearance and color of the grid in the underlying view
> Font	Change the font of the underlying view and its foreground and background color
Greeks	Change the option pricing model for calculating the greeks and its input values (volatility, interest rate)
> Grid	Change the appearance and color of the grid in the greeks view
> Font	Change the font of the greeks view and its foreground and background color
Options Matrix	Choose the visible expiration dates and filter by strike price
> Columns	Add, remove and rearrange the columns of the options matrix view
> Update	Assign an update style to specific columns in the options matrix view
> Grid	Change the appearance and color of the grid in the options matrix view
> Font	Change the font of the options matrix view and its foreground and background color
> Header	Change the colors of the header and middle column in the options matrix view

In addition, you can change the grouping of the options (by expiration date or strike price), hide the underlying / greeks view, and adapt the number of decimal places shown for both the underlying and its options.

For more information, see Options Matrix on page 59.

Showing, Hiding and Changing Views

An options matrix document consists of two views: The underlying view on top, which shows data about the underlying symbol, and the options matrix view, which shows the Eurex options for this underlying. The options are either grouped by expiration date (default) or by strike price. The underlying view can also be hidden.

To group options by expiration date or by strike price

- Right-click on the options matrix and choose **Group by Strike Price** or **Group by Expiration Date** to switch between the two grouping methods.

> **Note** This setting can also be adapted in the **Options Matrix Properties**.

To expand and collapse groups

- Double-click on a group header to expand or collapse a group.
- Press and hold the CTRL key while double-clicking on a group header to expand a group and at the same time collapse all other groups (switching between groups).

To select symbols in the options matrix view

- Click on a row to select an options symbol (Call side or Put side). You can also select multiple symbols by holding the CTRL or SHIFT keys.
- Click on the middle column (strike price or expiration date column) to select both sides at the same time.
- Press CTRL + A to select all visible options symbols at once.

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- After selecting one or more option symbols, you can perform actions on them by right-clicking the selection (for example open a price page, copy the content to Excel etc.).

Note You cannot select individual columns in the options matrix view.
If you double-click the middle column, the **Options Matrix Properties** dialog opens.

To show and hide the underlying view

- Right-click on the options matrix and choose **Show Underlying** or **Hide Underlying**.

Changing the Number of Decimal Places

You can change the number of decimal places that is used for both the underlying symbol and its options.

To change the number of decimal places for the options matrix

- Right-click the options matrix and choose **Set decimal places**.
- In the **Set decimal places** dialog, enter the number of decimal places that you want to use for both the underlying symbol and the options.

Note The custom decimal places set for the underlying symbol will be used for this symbol in all documents (charts, time and sales, market depth, quick quote, price pages etc.). You can also change this setting under **Tools > Options > General > Subscription** (see Subscription Settings on page 339).
The decimal places set for the options symbols will only be used within options matrix documents.

Filtering Information in the Options Matrix

You can filter the options that are shown in the options matrix by expiration date and/or by strike price. Choose which expiration dates and range of strike prices should be shown in the document.

To filter by expiration date

- Right-click on the options matrix document and select **Properties**.
- In the **Options Matrix Properties** dialog, click **Options Matrix**.
- Under **Show expiration dates**, select all expiration dates that should be visible in the document. Clear all check boxes for the expiration dates that should not be visible.

To filter by strike price

- Select **Show strike prices between...**
- Enter the lower and upper limits of the strike price range that you want to see in the options matrix document.

To filter by distance to market price

- Select **Show Near-the-Money options at a distance of x % to the market price**.
- Enter the maximum distance between the market price and the strike price (in percent). Option contracts with a strike price that has a wider distance to the market price than set here will be invisible.

To filter by trading activity

- Select **Hide options that are not actively traded**.
- All option contracts that have never been traded will be invisible.

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Note Options will be filtered only when reloading the options matrix document (for example, when opening a workspace).

Showing Greeks and the Put/Call Ratio

You can show both the so-called "Greeks" and the Put/Call Ratio in the options matrix document:

- The *Greeks* (Theoretical Value, Delta, Gamma, Vega, Theta, Rho) for the highlighted options contracts are shown in a separate Greeks view
- The current *Put/Call Ratio* of all options or the *filtered Put/Call Ratio* for only the visible options is shown as an additional column in the underlying view

To show and hide the Greeks view

- Right-click on the options matrix and choose **Show Greeks** or **Hide Greeks**.

To change the option pricing model

You can choose the option pricing model that is used for calculating the greeks, and adapt the option model's input values volatility and interest rate. See Customizing the Greeks View on page 130.

To add and remove the Put/Call Ratio columns

- Right-click in the options matrix and select **Properties**.
- On the left side of the dialog, select **Underlying**.
- On the right side of the dialog, look for the columns **PutCallRatio** and **FilteredPutCallRatio** and add or remove them like you would in a price page (see Adding and Removing Columns on page 80).

Customizing the Underlying View

The underlying view displays information about the underlying symbol of the options matrix – for example, a stock, index or future. It can be customized in the same way as a price page or watch list: You can insert and rearrange columns, change the update style of a column and customize font, colors and grid lines in the **Options Matrix Properties** dialog.

To add columns to and remove them from the underlying view

- Right-click in the underlying view and select **Properties**.
- On the left side of the dialog, select **Underlying**.
- On the right side of the dialog, add and remove columns like you would in a price page.

For detailed instructions, see Adding and Removing Columns on page 80.

To rearrange and resize the columns of the underlying view

- Right-click in the underlying view and select **Properties**.
- On the left side of the dialog, select **Underlying**.
- On the right side of the dialog, move columns up and down like you would in a price page.

For detailed instructions, see Rearranging and Resizing Rows and Columns on page 81.

To change the update style for the columns of the underlying view

- Right-click in the underlying view and select **Properties**.
- On the left side of the dialog, select **Underlying > Update**.

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- On the right side of the dialog, change the update styles like you would in a price page.

For detailed instructions, see Changing the Update Style of a Column on page 83.

To change the grid style of the underlying view

- Right-click in the underlying view and select **Properties**.
- On the left side of the dialog, select **Underlying > Grid**.
- On the right side of the dialog, change the grid style like you would in a price page.

For detailed instructions, see Changing the Grid Style on page 84.

To change font and colors of the underlying view

- Right-click in the underlying view and select **Properties**.
- On the left side of the dialog, select **Underlying > Font**.
- On the right side of the dialog, change font and colors like you would in a watch list.

For detailed instructions, see Changing Font and Colors on page 133.

Customizing the Greeks View

The greeks view displays information about the so-called "Greeks" for the highlighted options contracts. You can choose the option pricing model that is used for calculating the greeks, and adapt the option model's input values volatility and interest rate. You can also customize font, colors and grid lines in the **Options Matrix Properties** dialog.

To change the option pricing model's input values (Volatility / Interest Rate)

- Right-click in the greeks view and select **Properties**.
- On the left side of the dialog, select **Greeks**.
- On the right side of the dialog, check **Use custom values**.
- Enter your custom values for **Volatility** and **Interest rate**.
- You can also change the default values for the number of **Days per year** that are used in calculations, and for the number of **Tree Steps** that are used in the Binomial options pricing model.

> **Note** The default value for volatility is determined by the field **Volatility1Y** of the underlying symbol. The default value for the interest rate can be set under **Tools > Options > General** (see General Settings on page 339).

To change the option pricing model for calculating the greeks

- Right-click in the greeks view and select **Properties**.
- On the left side of the dialog, select **Greeks**.
- On the right side of the dialog, choose the option pricing model that should be used to calculate the greeks:

Black Scholes	This option pricing model is based on the Black-Scholes equation by Fischer Black and Myron Scholes (1973). When using this model, all option contracts are treated as if they could only be exercised on expiration in calculations ("European options").
Binomial (Cox-Ross-Rubinstein)	This option pricing model was developed by John Cox, Stephen Ross and Mark Rubinstein. It models the dynamics of the option's theoretical value for discrete time intervals over the option's life and takes into account the differences between American and European options.

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To change the grid style of the greeks view

- Right-click in the greeks view and select **Properties**.
- On the left side of the dialog, select **Greeks > Grid**.
- On the right side of the dialog, change the grid style like you would in a price page.

For detailed instructions, see Changing the Grid Style on page 84.

To change font and colors of the greeks view

- Right-click in the greeks view and select **Properties**.
- On the left side of the dialog, select **Greeks > Font**.
- On the right side of the dialog, change font and colors like you would in a watch list.

For detailed instructions, see Changing Font and Colors on page 133.

Customizing the Options Matrix View

The options matrix view displays all options for an underlying, grouped by expiration date or strike price (see Showing, Hiding and Changing Views on page 127). You can expand / collapse groups by double-clicking on their header. Call options are shown on the left side, and Put options on the right side. The options matrix view can be customized in the same way as a price page or watch list: You can insert and rearrange columns, change the update style of a column and customize font, colors and grid lines in the **Options Matrix Properties** dialog.

To add columns to and remove them from the options matrix view

- Right-click in the options matrix view and select **Properties**.
- On the left side of the dialog, select **Options Matrix > Columns**.
- On the right side of the dialog, add and remove columns like you would in a price page. The columns are added/removed on both sides (Calls and Puts) of the options matrix.

For detailed instructions, see Adding and Removing Columns on page 80.

To rearrange and resize the columns of the options matrix view

- Right-click in the options matrix view and select **Properties**.
- On the left side of the dialog, select **Options Matrix > Columns**.
- On the right side of the dialog, move columns up and down like you would in a price page. The columns are rearranged on both sides (Calls and Puts) of the options matrix.

For detailed instructions, see Rearranging and Resizing Rows and Columns on page 81.

To change the column layout of the options matrix view

- Right-click in the options matrix view and select **Properties**.
- On the left side of the dialog, select **Options Matrix**.
- On the right side of the dialog, select **Same layout on both sides** to show the same column order on both the Calls and the Puts side, or select **Mirrored layout** to show the reverse column order on the Puts side.

To change the update style for the columns of the options matrix view

- Right-click in the options matrix view and select **Properties**.
- On the left side of the dialog, select **Options Matrix > Update**.
- On the right side of the dialog, change the update styles like you would in a price page.

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For detailed instructions, see Changing the Update Style of a Column on page 83.

To change the grid style of the options matrix view

- Right-click in the options matrix view and select **Properties**.
- On the left side of the dialog, select **Options Matrix > Grid**.
- On the right side of the dialog, change the grid style like you would in a price page.

For detailed instructions, see Changing the Grid Style on page 84.

To change font and colors of the options matrix view

- Right-click in the options matrix view and select **Properties**.
- On the left side of the dialog, select **Options Matrix > Font**.
- On the right side of the dialog, change font and colors like you would in a watch list.

For detailed instructions, see Changing Font and Colors on page 133.

To change font and colors of the group headers

- Right-click in the options matrix view and select **Properties**.
- On the left side of the dialog, select **Options Matrix > Header**.
- On the right side of the dialog, change the **Foreground** and **Background** colors. These colors also apply to the strike / expiration date column in the middle of the options matrix.

To expand and collapse groups

- Double-click on a group header to expand or collapse a group.
- Press and hold the CTRL key while double-clicking on a group header to expand a group and at the same time collapse all other groups (switching between groups).

Customizing Watch Lists

Watch list documents are very similar to price pages. Therefore, you can customize the same settings as in a price page in the **Watch List Properties** dialog. You can also sort the rows of a watch list, freeze the leftmost columns, select several rows or columns at once and link documents to a watch list. For more information, see Watch List on page 58.

Additionally, you can enter data for your portfolio in the watch list columns on the right.

To add columns to and remove them from the watch list

See Adding and Removing Columns on page 80.

To rearrange and resize the columns of the watch list

See Rearranging and Resizing Rows and Columns on page 81.

To change the update style for the columns of the watch list

See Changing the Update Style of a Column on page 83.

To change the grid style of the watch list

See Changing the Grid Style on page 84.

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To sort the rows of a watch list

See Sorting the Contents of a Price Page on page 88

Note There is no automatic sorting for watch lists.

To freeze and unfreeze columns on a watch list

See Freezing a Column on page 89

To select rows and columns from a watch list

See Selecting Rows or Columns of a Price Page on page 89

To link documents to a watch list

See Linking Documents to a Price Page on page 89

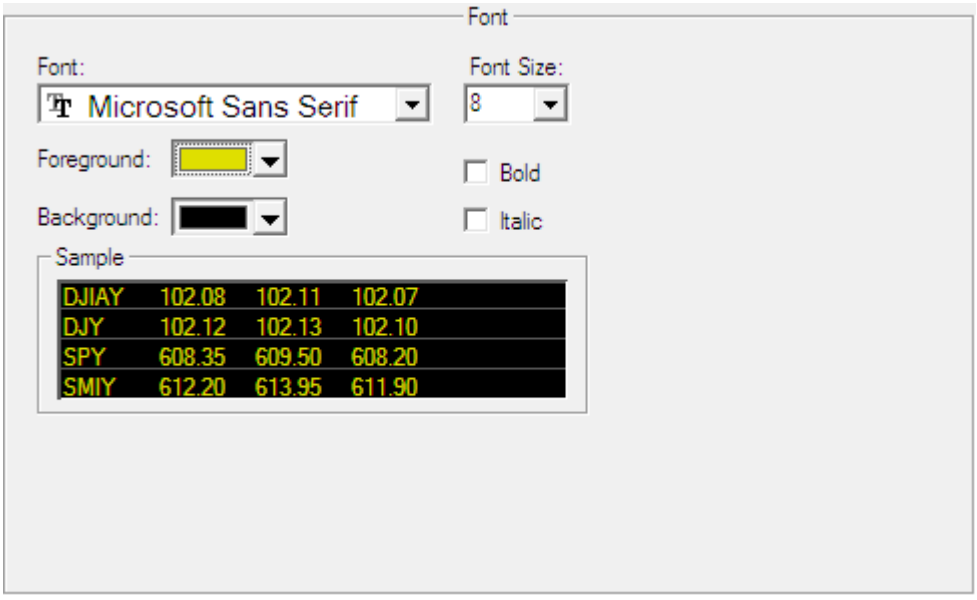
Note There is no row highlight mode in watch lists.

Changing Font and Colors

You can change the font of the watch list texts, the color of the text and the background color of the watch list on the **Font** property sheet of the **Watch List Properties** dialog.

To change font and colors of a watch list

- Right-click in the watch list and select **Properties**.
- On the left side of the dialog, select **Font**.
- On the right side of the dialog, adapt the default settings to your needs.
- You can see a preview for your settings in the **Sample** window at the bottom of the dialog.



Control	Description

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Font	Type of font used for watch list texts
Font Size	Size of the font used for watch list texts
Bold	Check to apply a bold font to all watch list texts
Italic	Check to apply an italic font to all watch list texts
Foreground	Color of the watch list text
Background	Background color of the watch list

Entering Amounts, Buy Dates and Prices in a Watch List

To use the portfolio functionalities of a watch list, you have to enter the purchase data for each security in your portfolio into the following four columns:

Column	Description
Amount	Quantity of the security you bought (for example 100 shares)
Buy Date	Date when you bought the security
Buy Price	Price that you paid for the security
Multiplier	Multiplier for Forex adjustments or derivative contracts

Based on the current quotes, the following values are calculated for you and are automatically updated whenever new prices arrive:

Column	Description
Total P/L	Profit or loss for all shares (based on the **Amount** that you entered)
P/L	Profit or loss for one share
P/L Perc	Profit or loss in percent
Asset Value	Current value of your assets

To enter purchase data for a security (Amount, Buy Price, Multiplier)

- In the row of the security, double-click on the column **Amount**, **Buy Price** or **Multiplier**.

> **Note** You can also right-click on the column and choose **Edit**.

- Enter the data and press the ENTER key.

To enter purchase data for a security (Buy Date)

- In the row of the security, double-click on the column **Buy Date**.

> **Note** You can also right-click on the column and choose **Edit**.

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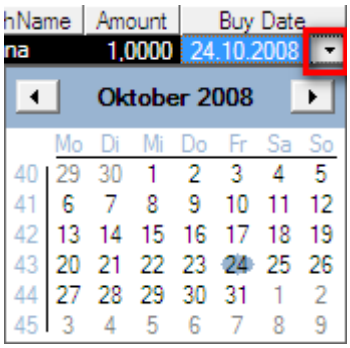
- Click on the arrow next to the date and choose a date from the calendar.



Customizing Web Watch

Web watch windows do not have a properties dialog. You can, however, manage the links that you have visited while the browser window was open, navigate between visited web pages, and use other basic functions of a web browser.

For more information, see Web Watch on page 62.

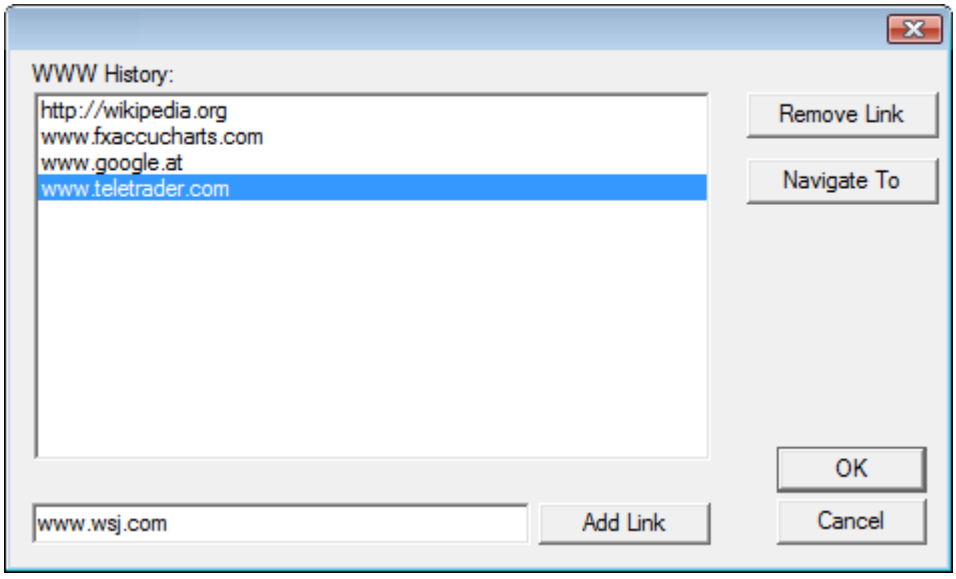
Managing Visited Links

While your web watch browser window is open, all links that you visit are automatically stored in its WWW history. You can navigate directly to an already visited link, remove a link from the list, or add links to the history without loading them.

When you close a web watch window, its WWW history of visited links is lost. If you want to keep this list to use it again later with a new window, you can save your web watch window as a template. When you later open a new web watch window with the saved template, the history is restored automatically.

To manage visited links

- Click the **Manage Visited Links** icon on the navigation bar:
- To browse to a link, select the link in **WWW History** list and click **Navigate To**.



- To remove a link from the history, select the link and click **Remove Link**.
- To add a link to the history, enter the URL into the field at the bottom and click **Add Link**.

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To save the history of visited links as a template

- On the **File** menu, click **Save as Document Template**.
- In the **Save As** dialog, enter a name for the template in the **File name** field.
- Click **Save**.

> **Note** For more information about templates, see Saving your Preferences in Templates on page 145.

Navigating Between Web Pages

The web watch window works like a usual web browser. You can navigate to specific pages by typing their address, jump back to the previously displayed page, reload a page and search inside the text of a page.

To navigate with the web watch navigation bar

- Click on the appropriate icon to navigate between web pages.

	Back	Jumps back to a previously visited page.
	Forward	Jumps forward to a previously visited page.
	Stop	Stops loading the current page.
	Refresh	Reloads the current page.
	Find on this page	Searches for text on the current page.
	Search on Internet	Jumps to an Internet search engine.
	Manage Visited Links	Displays the **Visited Links** dialog.
	Navigate	Navigates to the address (URL) entered in the address field on the right.

Customizing Quick Quote

For the quick quote document, you can customize the following settings in the **Quick Quote Properties** dialog:

Property Sheet	Description
Fields	Add, remove and rearrange the fields of a quick quote document
Update	Assign an update style to specific fields of a quick quote document
Font	Change the font of a quick quote document and its foreground and background color

For more information, see Quick Quote on page 63.

Changing the Fields, Update Style, Font and Colors of Quick Quote

Each quick quote document displays a set of data fields for each symbol, depending on the symbol type (Stock, Index, Future...). You can change the fields that are shown in the quick quote document, the update style of a field (the visual effect that is displayed when prices change) and adapt the font and colors used. This is done in the same way as in a price page or watch list.

When you change the symbol in a quick quote document, an appropriate template for the new symbol type is applied automatically (see Quick Quote Settings on page 346).

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To add fields to or remove them from a quick quote document

- Right-click in the Quick Quote window and select **Properties**.
- On the left side of the dialog, select **Fields**.
- On the right side of the dialog, add and remove fields like you would in a price page.

For detailed instructions, see Adding and Removing Columns on page 80.

To change the update style for the fields of a quick quote document

- Right-click in the Quick Quote window and select **Properties**.
- On the left side of the dialog, select **Update**.
- On the right side of the dialog, change the update styles like you would in a price page.

For detailed instructions, see Changing the Update Style of a Column on page 83.

To change font and colors for a quick quote document

- Right-click in the Quick Quote window and select **Properties**.
- On the left side of the dialog, select **Font**.
- On the right side of the dialog, change font and colors like you would in a watch list.

For detailed instructions, see Changing Font and Colors on page 133.

Displaying Market Depth in a Quick Quote document

A quick quote document can displayed first five levels of a market depth.

To show market depth in a a quick quote document

- Right-click in the Quick Quote window and select **Show Market Depth View**.

> **Note** When the Market Depth is visible in a Quick Quote window, the available command will be **Hide Market Depth View**.

Customizing the Ticker Pane

For the Ticker pane, you can customize the following settings in the **Properties** dialog:

Property Sheet	Description
General	Change the data displayed in the ticker and its scrolling speed
Font	Change the font of the ticker pane and the colors used for its different elements
Filter	Set a volume or change filter for the ticker

You can also change the direction in which the ticker scrolls.

> **Note** Like all other panes, the Ticker pane can be undocked and moved on the screen. See Undocking, Moving and Hiding Panes on page 144.

For more information, see Ticker on page 63.

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Changing the Data Displayed in the Ticker

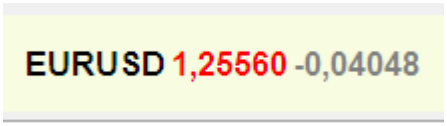
You can change the data that is displayed for each symbol in the ticker pane on the **General** property sheet of the **Properties** dialog.

To change the data displayed for each symbol in the ticker

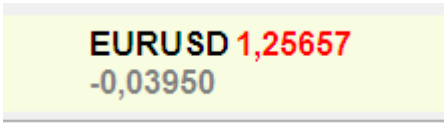
- Right-click in the ticker pane and select **Properties**.
- On the left side of the dialog, select **General**.
- On the right side of the dialog, select the data that you want to display for each symbol.

Last Price	Price of the last trade for this symbol
Volume	Volume of the last trade for this symbol
Net Change	Difference between the current trade price and the closing price of the last trading session for this symbol

- Choose if you want to display the data in **One line** or in **Two lines**.



One line ticker



Two lines ticker

Changing Speed and Direction of the Ticker

The ticker scrolls in one direction at a constant speed. You can change both the speed at which it scrolls and its direction.

To change the speed of the ticker

- Right-click in the ticker pane and select **Properties**.
- On the left side of the dialog, select **General**.
- On the right side of the dialog, drag the **Constant speed** control to the right to increase the speed, or to the left to decrease the speed.

Note If you want the ticker to move only when new ticks arrive for a symbol, clear the **Constant speed** checkbox.

To change the direction of the ticker

- Place the mouse pointer on the ticker pane. The mouse pointer changes:

- Hold the mouse button down and move the mouse in the direction that you want the ticker to scroll.

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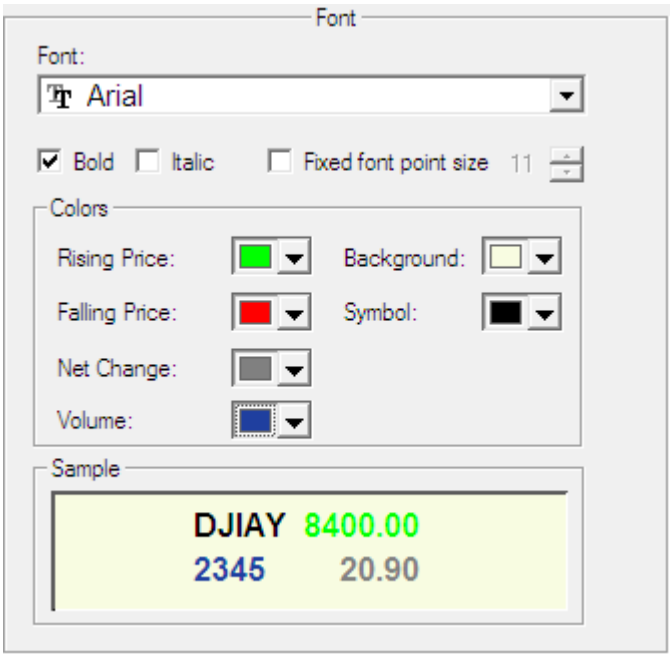
Changing Font and Colors of the Ticker

You can change the font of the ticker pane, its background color and the colors of its elements (symbol ticker, last price, volume and net change). You can set different colors for rising and falling prices.

To change the font and colors of the ticker pane

- Right-click in the ticker pane and select **Properties**.
- On the left side of the dialog, select **Font**.
- On the right side of the dialog, adapt the default settings to your needs.
- You can see a preview for your settings in the **Sample** window at the bottom of the dialog.



Control	Description
Font	Type of font used for all text in the ticker pane
Bold	Check to apply a bold font to all text
Italic	Check to apply an italic font to all text
Fixed font point size	Check to enter a fixed font size between 4 and 12 point Uncheck to automatically use a font size in proportion to the size of the ticker pane
Rising Price	Color of the last price data when the price is rising
Falling Price	Color of the last price data when the price is falling
Net Change	Color of the net change data
Volume	Color of the volume data
Background	Background color of the ticker pane
Symbol	Color of the symbol's ticker

Filtering Information in the Ticker

You can filter the information that is shown in the ticker pane by the price change or the volume of the last trade. When you are filtering by *price change*, new ticks are only shown in the ticker when the change in price compared to

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the previous trade satisfies the conditions set here. For example, you could show only ticks that change the price by more than 0,02. When you are filtering by *volume*, ticks are only shown when their volume satisfies the conditions. For example, you could show only ticks that exceed a certain volume.

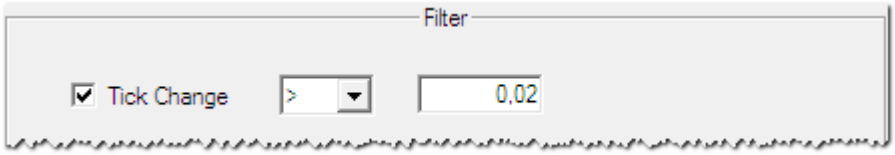
To filter the information shown in the ticker pane

- Right-click in the ticker pane and select **Properties**.
- On the left side of the dialog, select **Filter**.
- On the right side of the dialog, select the appropriate filtering option.

Tick Volume	Volume of the last trade
Tick Change	Difference between the current trade price and the previous trade price

- Choose your condition, and enter the price change or volume.

=	Only ticks that have a price change or volume *equal to* the value that is set here are shown in the ticker
<	Only ticks that have a price change or volume *smaller than* the value that is set here are shown in the ticker
>	Only ticks that have a price change or volume *greater than* the value that is set here are shown in the ticker
<=	Only ticks that have a price change or volume *equal to or smaller than* the value that is set here are shown in the ticker
>=	Only ticks that have a price change or volume *equal to or greater than* the value that is set here are shown in the ticker



Customizing the Navigation Pane

The Navigation pane consists of three tabs: *QuickBar*, *DataBar* and *FastLook*. For each tab, you can customize the font and colors that are used. For FastLook, you can additionally change how symbols stored there are displayed in the list.

Each tab has its own properties dialog, but there is also a properties dialog for the whole Navigation pane. There, the dialogs of the QuickBar and FastLook tabs are shown in tree view. This makes it easier for you to do several changes at once.

You can also change the docking behavior of the complete navigation pane, move it on the screen and automatically hide the pane to only show it when it is needed.

To access the Navigation pane properties dialog

- On the **Format** menu, choose **Navigation Pane**.
- On the left side of the dialog, choose the tab that you want to customize.

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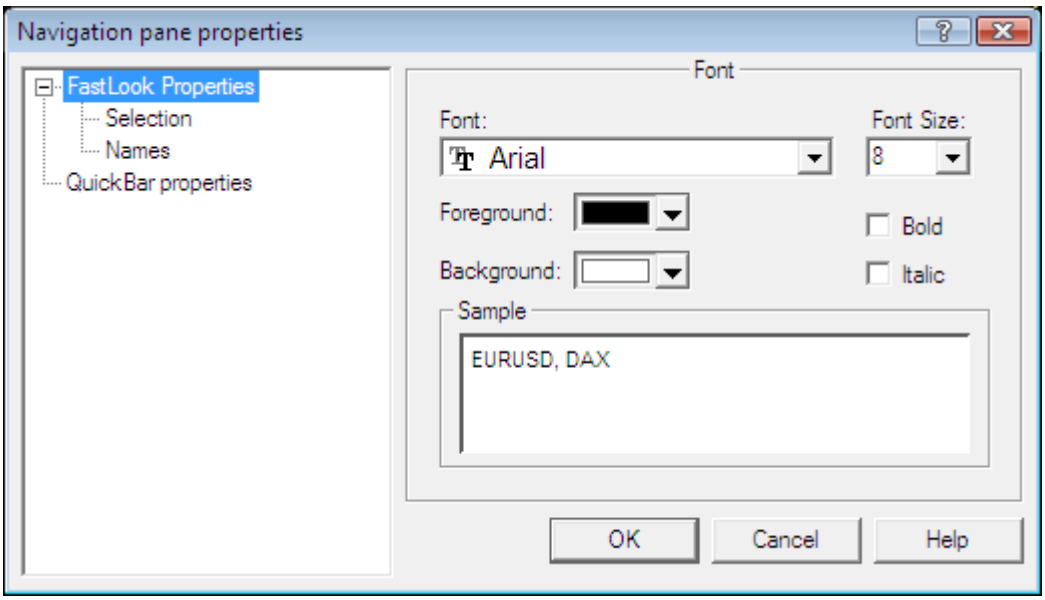
- On the right side of the dialog, adapt the default settings to your needs.

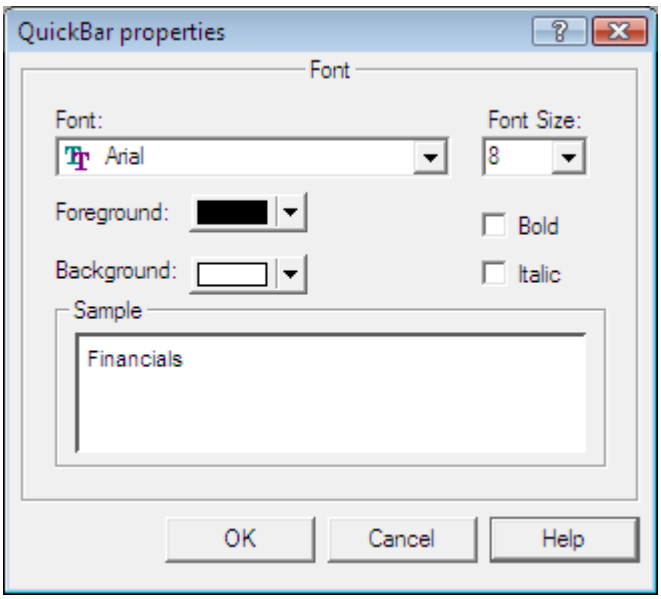


Customizing the QuickBar

You can change the font and colors that are used to display the QuickBar, but you cannot change the contents of the QuickBar.

To change the properties of the QuickBar

- Right-click the QuickBar and select **Properties**.
- In the **QuickBar properties** dialog, adapt the default settings to your needs.
- You can see a preview for your settings in the **Sample** window at the bottom of the dialog.



Control	Description
Font	Type of font used for the captions of the QuickBar icons
Font Size	Size of the font used for the captions of the QuickBar icons

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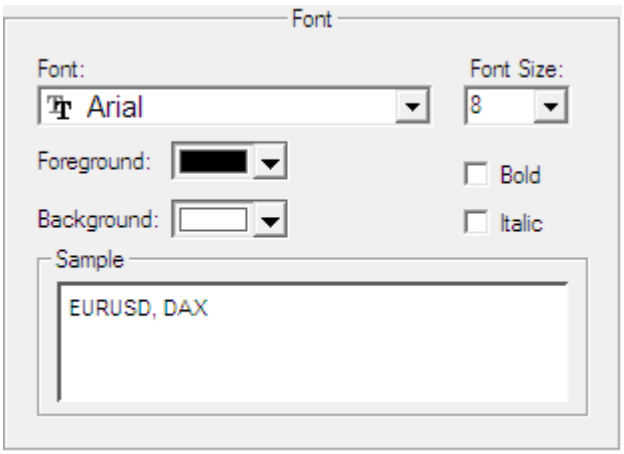
Foreground	Color of the captions of the QuickBar icons
Background	Background color of the QuickBar
Bold	Check to apply a bold font to the captions
Italic	Check to apply an italic font to the captions

Customizing FastLook

You can change the font and colors used in FastLook and how symbols stored there are displayed in the list.

To change the font and colors of FastLook

- Right-click FastLook and select **Properties**.
- On the left side of the dialog, choose **Display**.
- On the right side of the dialog, adapt the default settings to your needs.
- You can see a preview for your settings in the **Sample** window at the bottom of the dialog.



Control	Description
Font	Type of font used in FastLook
Font Size	Size of the font used in FastLook
Foreground	Color of the font used in FastLook
Background	Background color of FastLook
Bold	Check to apply a bold font to the text
Italic	Check to apply an italic font to the text

To change the highlight colors for selected symbols

- Right-click FastLook and select **Properties**.
- On the left side of the dialog, choose **Display > Selection**.

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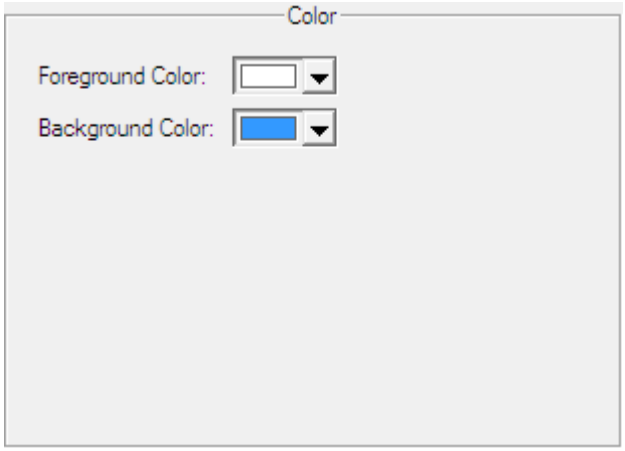
- On the right side of the dialog, choose a **Foreground Color** for the text of a selected symbol, and a **Background Color** for the background of a selected symbol.

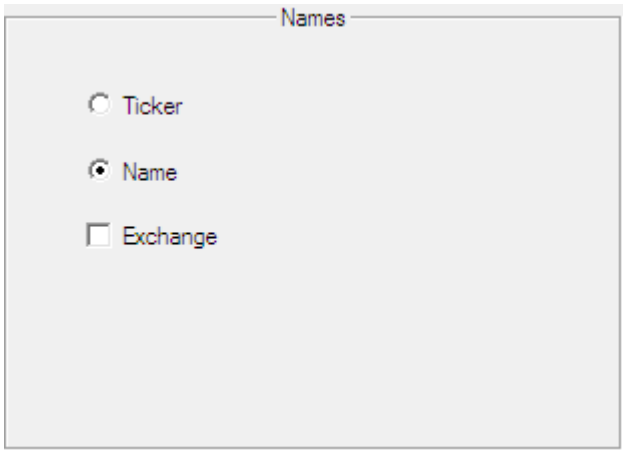


To change the symbol display in FastLook

- Right-click FastLook and select **Properties**.
- On the left side of the dialog, choose **Names**.
- On the right side of the dialog, choose what should be displayed for each symbol.

Ticker	Show the ticker of the symbol
Name	Show the name of the symbol

- Select **Exchange** when you want to display the name of the exchange after the ticker or name of a symbol.



Customizing the DataBar

You can change the font and colors that are used to display the DataBar.

To change the properties of the DataBar

- Right-click the DataBar and select **Properties**.
- In the **Chart DataBar Properties** dialog, adapt the default settings to your needs.

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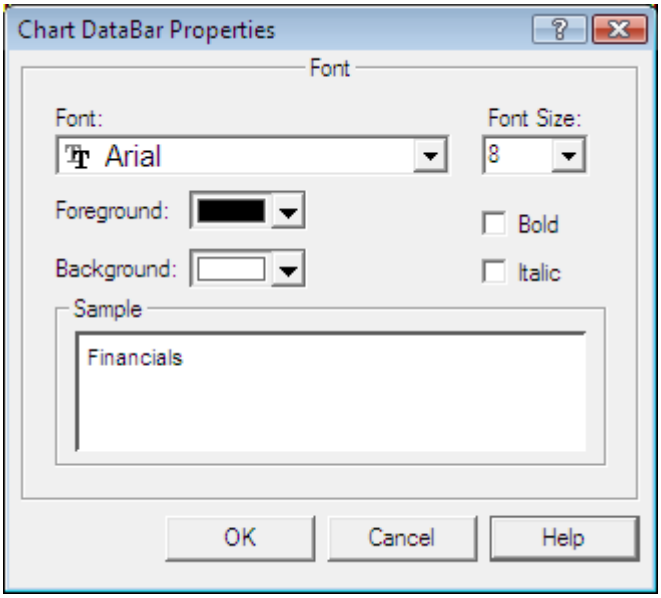
- You can see a preview for your settings in the **Sample** window at the bottom of the dialog.



Control	Description
Font	Type of font used in the DataBar
Font Size	Size of the font used in the DataBar
Foreground	Color of the font used in the DataBar
Background	Background color of the DataBar
Bold	Check to apply a bold font to the text
Italic	Check to apply an italic font to the text

Undocking, Moving and Hiding Panes

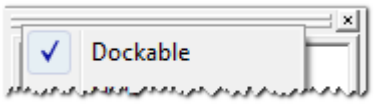
The navigation pane is usually docked at the left side of the Professional main window. You can however undock it, move it to any position on the screen, or dock it at the other side of the main window. In order to dock the navigation pane, its **Dockable** status must be active (it is activated by default).

You can also hide the navigation pane completely, or hide it temporarily and only show it when needed (auto-hide).

> **Note** The following information also applies to the Ticker pane and the Information pane. Exception: The Ticker pane cannot be hidden automatically.

To change the Dockable status of the navigation pane

- Right-click on the title bar or on the lines at the top of the navigation pane and choose **Dockable**:



- When the **Dockable** status is activated, you can dock the navigation pane by moving it to the right or left borders of the Professional main window. When the **Dockable** status is deactivated, the navigation pane behaves like any detached window and can be positioned freely on the screen. See Arranging Document Windows on the Screen on page 162.

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To undock and move the navigation pane

Note You can move the navigation pane both when it is docked or undocked.

- Click on the title bar or on the lines at the top of the navigation pane and hold the mouse button down.
- Drag the navigation pane window to the desired position on the screen.
- When the navigation pane is dockable, you can dock the navigation pane again by moving it to the right or left borders of the Professional main window. To prevent docking, press the CTRL key while moving the pane.

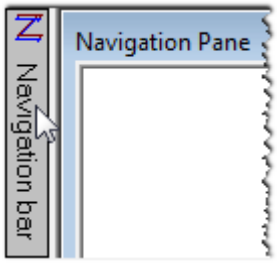
To hide the navigation pane

- Right-click on the title bar or on the lines at the top of the navigation pane and choose **Hide**.

Note To display the navigation pane again, choose **View > Navigation Pane** on the menu.

To automatically hide the navigation pane when it is not used

- Right-click on the lines at the top of the navigation pane when it is docked and choose **Auto hide**.
- The navigation pane will be hidden at the right or left border of the Professional main window. A vertical tab is shown instead: Move the mouse pointer over this tab to temporarily display the pane.



Note You cannot completely hide, move or undock the pane as long as it is automatically hidden. To deactivate auto-hide, move the mouse pointer over the tab to display the pane, right-click on its title bar and choose **Auto hide** again.

Saving your Preferences in Templates

When you change the properties of a document, for example its colors or the columns that are displayed, you might want to use these exact settings again for other documents. You might even want to use these settings automatically anytime you open a new document of this type.

To do so, you need to save your document settings as a template (see below). You then can apply this template to any new document that you open (and, in the case of price pages and watch lists, also to existing documents). You can also use this template as the default template for all new documents.

To save a document as a template

- Adapt the document to your needs.

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- On the **File** menu, click **Save as Document Template**.

> **Note** You can also click on the **Save as Template** icon in the **Main** toolbar:

- In the **Save As** dialog, enter a name for the template in the **File name** field.
- Click **Save**.

What information is saved in a template?

The information that is saved in a template depends on the document type. Generally speaking, all settings that you can change in the properties dialog of a document are also saved in a template. For some document types, the following additional settings are saved:

Document Type	Additional Saved Settings
Price Page	Number of sheet tabs – see Adding and Organizing Sheets on page 87
Chart	Chart type, data compression, inserted studies and panes, number of sheet tabs – see Charting on page 173
News	Displayed columns and view (headlines and/or stories) – see Showing and Hiding News Headlines and Stories on page 106
Market Depth	Displayed views – see Showing and Hiding Views on page 111
Options Matrix	Displayed views – see Showing, Hiding and Changing Views on page 127
Web Watch	Visited Links – see Managing Visited Links on page 135

Applying Templates to Documents

When you open a new document, you can usually choose which template you want to use (if you don't choose a specific template, the *default template* is used – for changing the default template, see Organizing Templates on page 147). Additionally, for some types of documents you can also change the template that is used even if the documents are already displayed on the screen.

To apply a different template to a price page, watch list or quick quote document

- Right-click anywhere in the document and select **Apply Template**.

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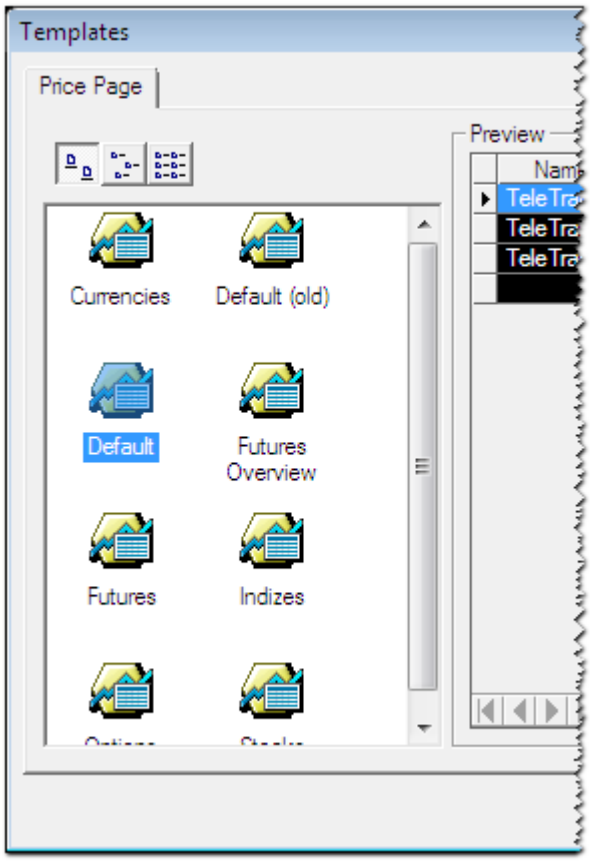
- In the **Templates** dialog, select the new template from the pane on the left side. You can see a preview of the template in the **Preview** pane on the right side.



- Click **OK**.

> **Note** When the applied template contains less sheet tabs than the original document, the symbols of the removed sheets will be moved to the first sheet.

To use a template when opening a symbol in a new document

See Opening Symbols in New Documents on page 64

To use a template when opening symbols for existing documents

See Opening Symbols from Existing Documents on page 66

> **Note** Choose this procedure if you want to open a chart, market depth, options matrix or news document with a different template, but containing the same symbol. Just open a chart document with a different template from the chart document that is displayed on the screen, for example.

Organizing Templates

Apart from creating new templates (see Saving your Preferences in Templates on page 145), you can also organize the existing templates. You can change the name of a template, specify which template is used by default and define your favorite templates.

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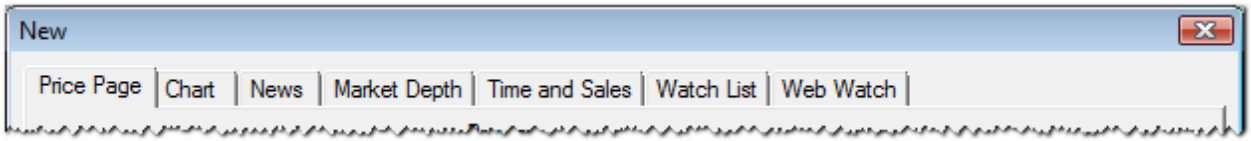
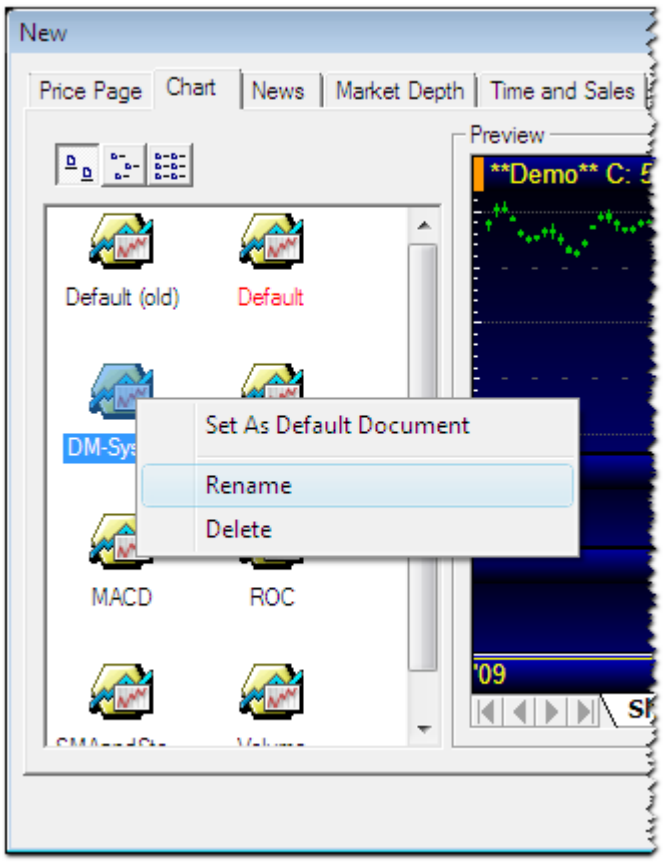
When you want to change the formatting of an existing template, you have to apply it to a document first, adapt it, and save it again under its former name, overwriting the old template.

To rename a template

- On the **File** menu, click **New Document**.
- In the **New Document** dialog, choose the document type of the template by clicking on the corresponding tab.



- In the **Template** pane on the left side, right-click on the template and choose **Rename**.



- Enter the new name for the template and press the ENTER key.
- Click **Cancel** to close the dialog without creating a new document.

Note It is strongly recommended not to rename the preconfigured templates, because these are used when opening documents from the QuickBar.

To set a default template

- In a price page, chart, market depth, time and sales, options matrix, quick quote or watch list document, right-click on a symbol and choose **Open**.
- Right-click the document type of the template (or move the mouse pointer to the document type and wait for a moment) – an additional menu will appear to the right.

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- Right-click the template – another additional menu appears.
- Click **Set As Default**.

> **Note** The default template is shown with a red label in the **New Document** dialog. It is used whenever you open a new document with the default template, for example when you open a symbol by double-clicking on it – see Opening Symbols from Existing Documents on page 66.
> The only exception are price pages that are opened from the QuickBar: They use an internal template.

To set a default template for quick quote

For quick quote documents, you can define different default templates for each symbol type (see also Quick Quote Settings on page 346). Therefore, when setting the default template for quick quote, you can choose whether this template should be used for just one symbol type, or for all symbol types.

- Right-click on a symbol and choose **Open**.
- Right-click **Quick Quote** – an additional menu will appear to the right.
- Right-click the template – another additional menu appears.
- Click **Set as default for all symbol types** to use this template as default for all types of symbols, or click **Set as default for this symbol type only** to use this template only for symbols of the same type as the current symbol (for example, if your current symbol is a stock, the template will only be used for stocks).

To define a favorite template

- In a price page, chart, market depth, time and sales, options matrix, quick quote or watch list document, right-click on a symbol and choose **Open**.
- Right-click the document type that you want to use as a favorite (or move the mouse pointer to the document type and wait for a moment) – an additional menu will appear to the right.
- Right-click the template – another additional menu appears.
- Click **Add to favorites**.
- The template is now added to your favorites, which are shown in a separate section beneath the list of document types when right-clicking a symbol.

> **Note** To remove a template from your favorite list, follow the steps above but click **Remove from favorites** instead.

To change an existing template

- Apply the template to a document: See Applying Templates to Documents on page 146
- Adapt the document to your needs.
- On the **File** menu, click **Save as Document Template**.
- In the **Save As** dialog, select the template that you want to change.
- Click **Save**.
- In the message box, click **Yes** to overwrite the existing template.

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Organizing and Saving Documents

Documents are windows that are shown inside the Professional main window. Most *documents* show quote data (like price pages or charts), but some documents also show other data, like news documents and web watch documents. You have several options to customize the content of your documents (see Customizing Documents, Pop-up Windows and Panes on page 78), but you can also adapt the document windows themselves, for example by automatically choosing the appropriate size for them, arranging them on the screen or copying them.

If you display many document windows, your screen may become too crowded. You can then organize those windows into so-called *virtual pages*. Virtual pages are collections of documents. Each virtual page takes up one computer screen, which means that you cannot display multiple virtual pages at once. Much like the pages of a book, you can only switch between virtual pages, display them one after each other or directly jump to a specific virtual page. TeleTrader Professional also offers a set of prepared virtual pages, with market overviews, up-to-date index lists and similar content.

A collection of virtual pages is called a *workspace*. You can have up to twenty virtual pages in each workspace; the smallest possible workspace consists of a single virtual page. A workspace can also contain additional Professional main windows and free floating windows that are needed for multi-monitor systems.

When you want to save your work, we recommend to always *save documents inside a workspace*. This way, you can save (and later open) several documents at once, and also save their size, settings and relative position on the screen. If you save single documents, only their individual settings and symbols are saved. Especially if you use linked documents, you have to save them in a workspace to be able to use them again in the same constellation.

Only one workspace can be open at the same time. When you want to have access to a list of symbols that you need across workspaces, independent of the workspace that is open at the moment, you should store them inside *FastLook*. FastLook is part of the Navigation pane and, similar to the QuickBar, contains lists of symbols that are grouped into folders and can be opened in documents at any time. The difference is that the symbols in FastLook are added and managed by yourself, whereas the QuickBar is maintained by TeleTrader and cannot be changed by you.

Workspaces

A TeleTrader Professional workspace is a collection of several documents, that can also be organized into up to twenty virtual pages. It is an easy way to save and open your documents. All properties of the document windows are saved, including their window size and position on the screen. If you work with multiple monitors, the workspace also remembers on which monitor it was displayed last and will automatically switch to this monitor.

We recommend to always save your documents inside a workspace.

Creating and Saving Workspaces

When you start TeleTrader Professional, the program automatically opens a workspace. If you have selected the option **Reopen last workspace** in the login dialog, it will open the last workspace that you have worked with. If you did not select this option, Professional creates a new, empty workspace when you start the program. You can of course also create a new workspace yourself and save it on your hard disk.

To create a new workspace

> **Note** If another workspace is already open when you use this command, it will be closed before the new workspace is created. If there are unsaved changes to this workspace, you will be asked if you want to save the changes.

- On the **File** menu, click **New Workspace**.
- A blank workspace is created. You can now add documents and virtual pages to it: See Creating and Saving Documents on page 159 and Copying and Moving Content Between Virtual Pages on page 156.

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To save a workspace

- On the **File** menu, click **Save Workspace**.

> **Note** You can also click on the **Save Workspace** icon in the **Workspace** toolbar:

- In the **Save workspace as** dialog, enter a name for the workspace in the **File name** field.

> **Note** The **Save workspace as** dialog appears only when you are saving the workspace for the first time.

- Choose the location where you want to save your workspace. Professional will suggest to save it into your **Documents** folder. You can use a different location, but some shortcuts for opening workspaces might then not work anymore.

> **Note** If you want to store all your workspaces in a different place than suggested by Professional, you can change the default path for **Documents** under **Tools > Options > File Locations**. See File Locations Settings on page 349.

- Click **Save**.

To save an existing workspace under a different name

- On the **File** menu, click **Save Workspace As**.
- In the **Save workspace as** dialog, enter a new name for the workspace in the **File name** field.
- Click **Save**.

Automatic backup of workspaces

Every time you save a workspace, a backup file is created automatically in the same folder as the original workspace. The backup file will have the file name extension *.bak* (for example, *MyWorkspace.bak*) and contains the workspace as it was before the changes that you saved last. You can recover the last version of the workspace from the backup file. Only the last save is backed up – if you save your workspace again, a new backup file is created, and the version before that is overwritten.

The backup can be useful if you have saved some changes by mistake: For example, you might have a workspace with several charts, and decide to close one of the charts. You then save the workspace. Some minutes later, you discover that you indeed still need the chart that you have just closed: You can now recover the last version of the workspace from the backup file.

> **Note** If you have not saved your changes yet, you can always revert to the last saved version of your workspace by simply not saving the changes. The following procedure applies only to changes that have been saved by mistake.

To recover the last version of a workspace from the backup file

- In your file system (for example, Windows Explorer), go to the folder where you have saved your workspace. The default location under Windows Vista is *C:\Users\[user]\Documents*.
- Find the backup file. It has the same name as your workspace, but a different file name extension, for example *MyWorkspace.bak*.
- Rename the file to *MyWorkspace_recovered.wks* (or a similar name). Be sure to change the file name extension to *.wks*.

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Note You might now see a message from your operating system that asks you if you are sure that you want to change the file name extension, as the file may become unusable. Click **Yes**.

- Double-click the renamed file. The last version of the workspace should now open in TeleTrader Professional.

Opening Saved Workspaces

When you have saved a workspace, you can later open it again in TeleTrader Professional. All the settings of the workspace are restored, for example the number of open documents with their symbols, the layout of virtual pages, the position of the document windows on the screen etc. You can only open one workspace at a time. Whenever you open a workspace, the workspace that was previously open is automatically closed.

To open a saved workspace

Note If another workspace is already open when you use this command, it will be closed before the other workspace is opened. If there are unsaved changes to this workspace, you will be asked if you want to save the changes.

- On the **File** menu, click **Open Workspace**.

Note You can also click on the **Open Workspace** icon in the **Workspace** toolbar:

- In the **Open** dialog, select the workspace that you want to open.

Note **Professional** will automatically suggest the location that is defined as the default path for **Documents**. To change this setting, see File Locations Settings on page 349.

- Click **Open**. For large workspaces, a progress bar is shown while Professional is loading the workspace.

Alternatively, you can also:

- Click on the arrow next to the **Open Workspace** icon in the **Workspace** toolbar:
- All workspaces that are saved in the default location (see File Locations Settings on page 349) are displayed in a list.
- Click on the workspace that you want to open.

Note Additionally, the four workspaces that were opened last are shown at the bottom of the **File** menu for quick access.

Closing Workspaces

When you close a workspace, a new empty workspace is created automatically at the same time. You can save the changes that you have made to the workspace, or discard them. If you save the changes, a backup file containing the last version of your workspace is created automatically: See Creating and Saving Workspaces on page 150.

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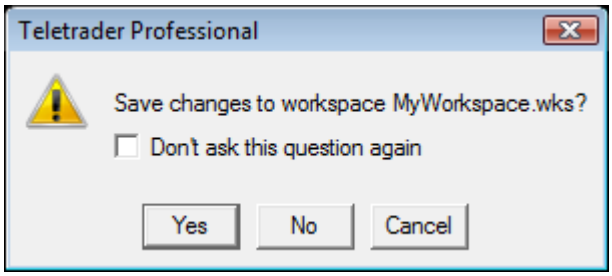
Warning *This action cannot be undone.* When you close a workspace without saving it first, you cannot open it again or get it back in another way. Be careful before you close a workspace without saving. See also Creating and Saving Workspaces on page 150.

To close a workspace

- On the **File** menu, click **Close Workspace**.

Note You can also click on the **Close Workspace** icon in the **Workspace** toolbar:
If you hold the CTRL key while clicking the **Close Workspace** icon, you will not close the workspace, but delete all documents from the active virtual page instead. See Organizing Virtual Pages on page 157.

- If there are unsaved changes to this workspace, you might be asked if you want to save the changes. Click **Yes** to save the changes, or **No** to discard them.



Note You can also save the answer to this question. For example, if you always want to save all changes, select the check box **Don't ask this question again** and click **Yes**. Professional will then automatically save all changes to every workspace when you close it. You can change this setting later: See Default Responses Settings on page 346.

- When the workspace is closed, a new empty workspace is created automatically.

Uploading Workspaces to TeleTrader Mobile

You can upload any saved Professional workspace to the TeleTrader server in order to use it with TeleTrader Mobile.

TeleTrader Mobile is an online financial portal for your mobile phone. It includes real-time quotes for the DAX index and for major cross rates, delayed data of international stock markets, news and many features such as charts, customizable price pages and text message notifications. Additional real-time services are available at a fee.

You can access TeleTrader Mobile by entering http://m.teletrader.com in the web browser of your mobile phone. Sign up for a TeleTrader Mobile account in order to be able to save your settings and use uploaded Professional workspaces.

Please note that not all features of TeleTrader Professional are available in TeleTrader Mobile.

To upload a workspace to TeleTrader Mobile

- Open the Professional workspace that you want to upload. See Opening Saved Workspaces on page 152.
- On the **File** menu, click **Upload Workspace to TeleTrader Mobile**.
- Enter your TeleTrader Mobile login data in the upload dialog. Check the **Auto Upload** option to update the workspace automatically whenever changes are saved in TeleTrader Professional.

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Optimizing the Load Time of Workspaces

In some cases, long load times might occur when opening large workspaces in TeleTrader Professional. In the following section you will find some tips and tricks to optimize the load time of your workspace.

Check the system requirements

Make sure that your computer meets the minimum requirements for running TeleTrader Professional. We recommend additional memory (RAM) for workspaces with a high number of charts or large time series.

The current system requirements are available online at http://professional.teletrader.com.

Reduce the number of (chart) documents

The more documents your workspace contains, the longer its load time. In most cases, you can easily reduce the number of open documents by linking them to a price page or watch list.

- Create a price page with all symbols that you want to display as a chart.
- Create a chart document for one of these symbols and link it to the price page.
- When you now choose a different symbol in the price page, it is automatically shown in the linked chart.

You can also link other documents (for example time and sales, market depth, news) to the same price page - with one click you can so see the same symbol in all linked documents. See Linking Documents to a Price Page on page 89.

Reduce the number of sheets in charts

A large number of sheets in your charts enlarges the load time of your workspace. Check which of those sheets you actually use regularly. If you have created similar sheets for several charts (for example with different time compressions), consider creating one chart with the appropriate sheets and linking it to a price page.

You can also display more than one sheet in a chart at the same time: See Using Sheets in Charts on page 211.

Hibernate inactive charts

With the setting **Hibernate inactive chart documents after x seconds** under **Tools > Options > General**, you can stop all unnecessary calculations for charts that are currently not visible (inactive sheets, other virtual pages) after a certain number of seconds. Activating this settings can significantly improve the performance for workspaces that contain a large number of charts. Of course, the hibernated chart documents will be updated as soon as they become active (visible) again. Charts that contain intersection or study alerts will never be hibernated.

Move rarely used virtual pages out of the workspace

If your workspace contains virtual pages that you rarely use, consider saving them to disk and opening them only if needed. See Opening and Saving Virtual Pages on page 157.

Close the windows that you don't need anymore

The command **Window > More Pages** shows an overview of all open windows and documents in your workspace. Select all document windows that you don't need anymore and click **Close Window(s)**.

Show less historical data in charts and time and sales documents

Professional needs more system resources if you load a lot of historical data in a chart or in time and sales. If you don't need the long data history on a regular basis, stick to the default time region settings to get a better load time for your workspace. Especially intraday charts or TickBar compressions enlarge the load time of a workspace tremendously, when very long time series are used.

- Default setting for charts: 510 records
- Default setting for time and sales: 50 records

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See Changing the Amount of Data Displayed in the Chart on page 217 and Changing the Amount of Data Displayed in Time and Sales on page 122.

Remove old drawing objects from your charts

Old drawing objects remain on your charts, but might not be relevant for your current analysis anymore. The command **Format > Objects** shows a current overview about the symbols, drawing objects and studies that are saved in a chart. Highlight the objects that you don't need anymore and click **Delete** to remove them.

Check your custom studies

You can create your own custom studies with the TeleTrader Language. If you think that some of your custom studies might contribute to performance problems, you can find some tips here: Recommended Best Practices on page 478

Virtual Pages

A virtual page is a collection of documents that is displayed on the computer screen. If you have so many documents that they would take up more place than is available on your screen, you can move some of those documents to another virtual page. You can switch between the virtual pages with your keyboard or the mouse. Only one virtual page can be shown on the screen at the same time.

Each workspace contains twenty virtual pages that can be filled with content. You can of course also leave some virtual pages empty. A virtual page is completely independent of the other virtual pages in a workspace.

Virtual pages are automatically saved with the workspace they belong to. If you want to save a virtual page independent of a workspace, you have to export it - you can later import it into any other workspace.

TeleTrader Professional also offers a set of prepared virtual pages, with market overviews, up-to-date index lists and similar content. These pages can be easily added to your existing workspace.

Switching Between Virtual Pages

There are twenty virtual pages available to you. The first virtual page is shown on the screen by default. You can switch to another virtual page, whether it is filled or not, or cycle trough all virtual pages that already have content.

To cycle through all virtual pages with content

Note With each of these commands, you cycle through all filled virtual pages. Empty pages are skipped.

- On the **Workspace** toolbar, click the **Virtual Page by Virtual Page** icon to go to the next virtual page:
- Press F12 to go to the next virtual page, or SHIFT + F12 to go to the previous virtual page.

To switch to a virtual page

Note With each of these commands, you can switch to empty or filled virtual pages. Virtual pages with content do have a star next to their name, or are shown as with a red number on the icon.

- On the **Workspace** toolbar, click on the arrow next to the **Virtual Page by Virtual Page** icon and select the virtual page.

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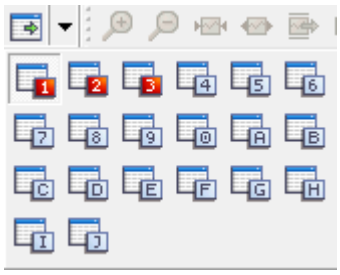

- On the **Window** menu, click **Go to Virtual Page** and select the virtual page.
- On the **QuickBar**, click on the **Virtual Pages** icon and select the virtual page.
- On the status bar, click on the name of the active virtual page and choose the virtual page in the pop-up.
- Hold the CTRL key and type the number of the virtual page that you want to switch to on your keyboard.

To switch to the next empty virtual page

- Press CTRL + F12 on your keyboard.

Copying and Moving Content Between Virtual Pages

You can copy or move the documents that are shown in a virtual page to another virtual page. If you copy a document, it is then shown on both virtual pages – if you move a document, it is removed from the original page.

You can also copy or move all documents of a virtual page at once. The position of the windows (*virtual page layout*) on the target virtual page will be the same as on the original virtual page.

To copy one document to another virtual page

- Click on the document that you want to copy to make it active.
- On the **Window** menu, click **Copy Window to Virtual Page** and select the target virtual page. This can also be a previously empty page.
- The document is copied to the virtual page that you selected.

To move one document to another virtual page

- Click on the document that you want to move to make it active.
- On the **Window** menu, click **Move Window to Virtual Page** and select the target virtual page. This can also be a previously empty page.
- The document is moved to the virtual page that you selected.

To copy all documents to another virtual page

- Switch to the virtual page that you want to be your source page.
- On the **Window** menu, click **Copy Virtual Page Layout To** and select the target virtual page. This can also be a previously empty page.
- All documents of the source page are copied to the virtual page that you selected. The page layout (position of the windows) will be the same in the target virtual page. The target virtual page will also receive the name of the source page.

To move all documents to another virtual page

- Switch to the virtual page that you want to be your source page.

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- On the **Window** menu, click **Move Virtual Page Layout To** and select the target virtual page. This can also be a previously empty page.
- All documents of the source page are moved to the virtual page that you selected. The page layout (position of the windows) will be the same in the target virtual page. The target virtual page will also receive the name of the source page.

Opening and Saving Virtual Pages

You can save a virtual page as a file, and later add it to any Professional workspace. TeleTrader Professional also offers a set of prepared virtual pages, with market overviews, up-to-date index lists and similar content.

To open a virtual page

- On the **File** menu, click **Open Virtual Page**.
- In the **Virtual Pages** dialog, select the virtual page that you want to open. There might be several tabs with different virtual pages. To find virtual pages that you have saved in different locations, click **Other Pages**.
- Click **OK**. The virtual page is added behind the last filled virtual page (if the workspace was empty, this is the first page).

> **Note** If you want to close the currently active virtual page, and replace it with the new virtual page, select **Replace displayed virtual page** before clicking **OK**.
> *This action cannot be undone – if you select this option, all documents on the active virtual page will be closed and replaced with the new virtual page.*

To save a virtual page

- On the **File** menu, click **Save Virtual Page As**.
- In the **Save Virtual Page** dialog, enter a name for the virtual page in the **File name** field.
- Choose the location where you want to save the virtual page. Professional will suggest to save it into the **Custom Virtual Pages** folder. You can use a different location, or even create an additional folder (the new folder will be shown as an additional tab in the **Virtual Pages** dialog, see above).
- Click **Save**.

Organizing Virtual Pages

You can change the name of a virtual page to describe its content more clearly. Professional just assigns numbers to each virtual page.

If you want to clear a virtual page, you can close all document windows on it at once. If you just want to remove a single document, just close the document – see Closing Documents on page 164.

To change the name of a virtual page

- On the **Window** menu, click **Page Title**.

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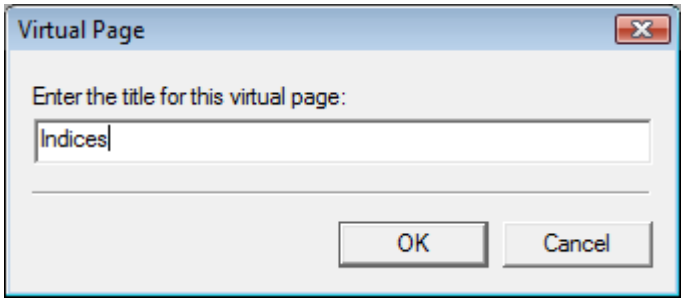
- In the **Virtual Page** dialog, edit the name of the virtual page.



- Click **OK**.

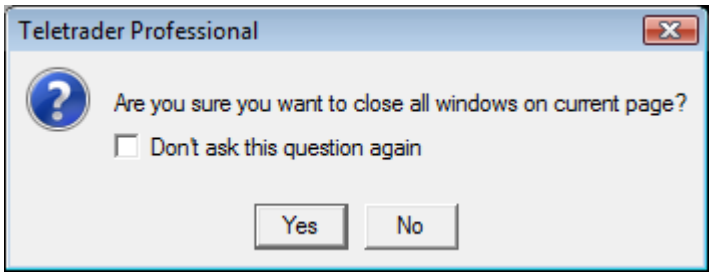
To reposition a virtual page

- On the **Window** menu, click **Set Virtual Page Layout As** and select the position where the current page should be moved to. This can also be a previously empty page.
- The complete virtual page is moved to the new position. If the new position was already filled with another virtual page, this page is moved to the following page position.

To close all documents on a virtual page

Warning *This action cannot be undone.* This will close all documents on this virtual page, including all their settings. If you want to use one of the windows later on, you have to first save it: See Creating and Saving Documents on page 159 and Creating and Saving Workspaces on page 150.

- On the **Window** menu, click **Close Windows on Current Page**.
- Click **Yes** to confirm the warning message.



Note You can save the answer to this warning by selecting the check box **Don't ask this question again** before clicking **Yes** or **No**. To later change this setting, see Default Responses Settings on page 346.

Documents

Documents are windows that are shown inside the Professional main window. Every time you open a symbol you create a new document. You can create as many documents as you like.

Every document is part of a workspace by default. You can save individual documents as a single file – however, we recommend to always save documents inside a workspace. See Creating and Saving Workspaces on page 150.

Document windows can be resized and arranged inside the Professional main window, but you can also detach them from the main window and position them freely on the screen. You can copy a document window, and of course print its contents.

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Creating and Saving Documents

New documents are created every time you open a symbol in a document. You can save individual documents as a single file – however, we recommend to always save documents inside a workspace. See Creating and Saving Workspaces on page 150.

> **Note** Charts can also be saved as a picture file. For more information, see Saving Charts as Picture Files on page 241.

To create a new document

To create a new document, you open a symbol with this document type. You can do this in several ways:

- Use the QuickBar, which holds the most popular symbols: See Opening Symbols from the QuickBar on page 31
- Use Symbol Search to find and open a specific symbol: See Opening Symbols from the Search Results on page 38
- Create a new empty document and insert one or more symbols there: See Opening Symbols in New Documents on page 64
- Take a symbol that is already displayed in a document and open it in another document: See Opening Symbols from Existing Documents on page 66
- To open a news document, click on the **News** icon in the QuickBar for general news, or search for news for a specific symbol: SeeDisplaying News for a Symbol on page 68.

To save a document

- On the **File** menu, click **Document > Save**.

> **Note** You can also click on the **Save** icon in the **Main** toolbar:

- In the **Save as** dialog, enter a name for the document in the **File name** field.

> **Note** The **Save as** dialog appears only when you are saving the document for the first time.

- Choose the location where you want to save your document. Professional will suggest to save it into your **Documents** folder. You can also use a different location.
- Professional automatically chooses the appropriate document type (file name extension) for the current document in the **Save as type** field.
- Click **Save**.

To save an existing document under a different name

- On the **File** menu, click **Document > Save as**.
- In the **Save as** dialog, enter a new name for the document in the **File name** field.
- Click **Save**.

Opening Saved Documents

When you have saved an individual document, you can later open it again in TeleTrader Professional. All settings and customizations of the document are restored. We recommend to save and open documents as a part of a workspace, though: See Creating and Saving Workspaces on page 150.

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To open a saved document

- On the **File** menu, click **Document > Open**.

> **Note** You can also click on the **Open** icon in the **Main** toolbar:

- In the **Open** dialog, select the document that you want to open. You can also choose its document type, if necessary, to shorten the list of displayed files:

Document Type	File Name Extension
Price Page (Standard)	*.tbl*
Price Page (Vertical)	*.vpp*
Price Page (Market Watch)	*.bmw*
Price Page (My Market Watch)	*.bmm*
Price Page (Last Net Change)	*.bln*
Chart	*.nch*
News	*.nws*
Market Depth	*.mdf*
Time and Sales	*.tnsd*
Time and Sales US	*.tns*
Options Matrix	*.omd*
Watch List	*.wld*
Web Watch	*.wwl*
Quick Quote	*.qqd*
Text Files	See Importing Security Lists on page 377

- Click **Open**.

Changing the Size of a Document Window

You can change the size of a document window. Each window can be displayed maximized (full screen), minimized (only an icon is visible), or with a custom size. You can also let Professional choose the appropriate size automatically.

> **Note** When you change the size of the Professional main window, all document windows that are shown within it are resized accordingly to fit the new window size. You can temporarily suppress automatic resizing by holding the CTRL key while changing the size of the main window. In the program options you can also permanently deactivate this feature (see General Settings on page 339).

To choose the appropriate size of a document window automatically

- In a price page, watch list, market depth, options matrix or time and sales document, right-click on the document window and choose **Auto Size**.

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> **Note** In a price page or watch list, you have to right-click on the upper left corner of the document to see this option. In other documents, you can right-click anywhere.

- The size of the document is adapted to show all columns, and fit in the Professional main window. Additionally, the width of all columns is adapted to show the widest entry in this column.

To maximize a document window

- In the upper right corner of the document window, click the **Maximize** button.

> **Note** You can also press the SHIFT key two times in a row to maximize a window, if it is not maximized already.

To minimize a document window

- In the upper right corner of the document window, click the **Minimize** button.

To enlarge (reduce) a document window

- In the upper right corner of the document window, click the **Enlarge** (**Reduce**) button.

- If the window was minimized, it will be enlarged. Otherwise, it will be reduced.

> **Note** You can also press the SHIFT key two times in a row to enlarge or reduce a window: If the window was maximized, it will be reduced. If the window was minimized, it will be enlarged.

Sticky Keys

When you press the SHIFT key five times in a row (for example, when you first maximize and then reduce a window with the SHIFT key), Windows might show a message asking you if you want to activate the "Sticky Keys" function. This is an accessibility feature that allows you to press one key at a time for keyboard shortcuts such as CTRL + C, instead of pressing them at the same time.

If you want to avoid this pop-up, click on the **Settings** button (or on the link in the message under Windows Vista). That sends you to the **Accessibility Options** (or **Ease of Access Center** under Windows Vista). There, clear the check box **Use shortcut** (or **Turn on Sticky Keys when SHIFT is pressed five times** under Windows Vista).

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Changing the Document Window Captions

Each document window has a window caption (title). You can change the title text, or hide the window captions if they take up too much space on the screen.

To change the title text of a document window

- On the **Window** menu, click **Document Title**.
- In the **Set Document Title** dialog, enter the new document title.

To show / hide the document window captions

- On the **View** menu, click **Window Captions** to show or hide them. The option is highlighted with a check mark when the **Window Captions** are displayed.

To move a document window without a caption

Normally, you can move a window by clicking on its window caption and dragging it. When the window caption is hidden, you can do the following:

- Right-click anywhere in the document window and choose **Move**.
- The mouse pointer changes:

- Hold the mouse button down, drag the window to its new location and release the mouse button to drop it there.

> **Note** Chart windows can also be moved by clicking on the chart header and dragging them. Price pages can be moved by clicking in the upper left corner and dragging them.

To close a document window without a caption

- Right-click anywhere in the document window and choose **Close**.

> **Note** See also Closing Documents on page 164.

Arranging Document Windows on the Screen

If you want to display a great number of documents on one screen (virtual page), you can let Professional automatically arrange them for you. You can also detach a document window from the Professional main window to create a free floating window that you can position on the screen independent of the main window.

To cascade document windows

- On the **Window** menu, click **Cascade**.

To tile document windows horizontally

- On the **Window** menu, click **Tile Horizontally**.

To tile document windows vertically

- On the **Window** menu, click **Tile Vertically**.

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To arrange minimized document window icons

- On the **Window** menu, click **Arrange Icons**.

To activate a document window (move to the foreground)

There are several ways to move a document window to the foreground, if it is (partially) hidden behind other windows:

- Click on any part of the document window that is still visible.
- If you cannot see any part of the document: On the **Window** menu, click on the name of the document window.
- If you want to activate a window that is on another virtual page: On the **Window** menu, click **More Pages**, select the virtual page on the left side of the dialog, and select a document window on the in the **Select window** list. Then, click **Activate**.

To copy a document window

- On the **Window** menu, click **Copy Window**.
- A new document is created, which is a copy of the current document window. The documents are not connected with each other – changes that you make in one document will not affect the other document.

To detach a document window

- On the **Window** menu, click **Detach Window**.
- You can now move the window independently of the Professional main window, and place it anywhere on your desktop. The document window includes all necessary menu commands and toolbars.

> **Note** In contrast to other document windows, a detached quick quote document does not show the menu bar by default. However, you can make the menu bar visible by right-clicking the detached quick quote document and choosing **Show Menu**.

To reattach a detached document window

- On the **Window** menu of the detached window, click **Attach Window to > TeleTrader Professional**.

> **Note** In detached quick quote documents, where the menu bar is not visible by default, you also can right-click the detached quick quote document to choose **Attach Window to**.

- The window is now attached to the Professional main window again. You can move it only within the constraints of the main window.

> **Note** If you have created additional Professional main windows, you can also attach the document window to another Professional instance. For more information, see Multi-Monitor Systems on page 171.

Printing Documents

All documents except market depth, quick quote and options matrix can be printed.

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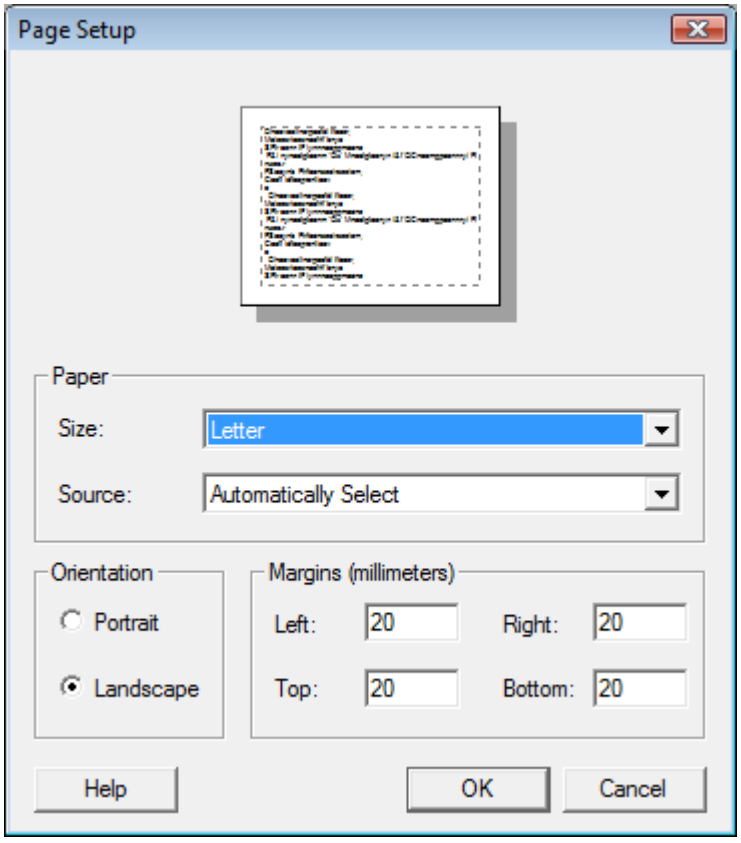
To print a document

- Click on the document that you want to print. For news documents, click on the news headlines to only print headlines, or on the news story to only print the active story.
- On the **File** menu, click **Print**.

> **Note** If you want to see a preview of your document before printing, choose **File > Print Preview**.

To change the page setup

- On the **File** menu, click **Page Setup**.
- You can change the paper size, orientation and page margins. Click **OK** when you are done.



> **Note** These settings apply to all document types.

To change the print setup for charts

- On the **File** menu, click **Chart Print Setup**.
- Adapt the options to your needs. See Printing Charts on page 240 for details.

Closing Documents

When you close a document, it is removed from the screen. You can only open the same document (with all its settings) again if you have saved it before closing. If the document is part of a workspace, it is also removed from the workspace when you close it.

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Warning *This action cannot be undone.* When you close a document window without saving it first, you cannot open it again or get it back in another way. Be careful before you close a document window without saving. See also Creating and Saving Documents on page 159 and Creating and Saving Workspaces on page 150.

To close a document window

- On the **File** menu, click **Document > Close**.

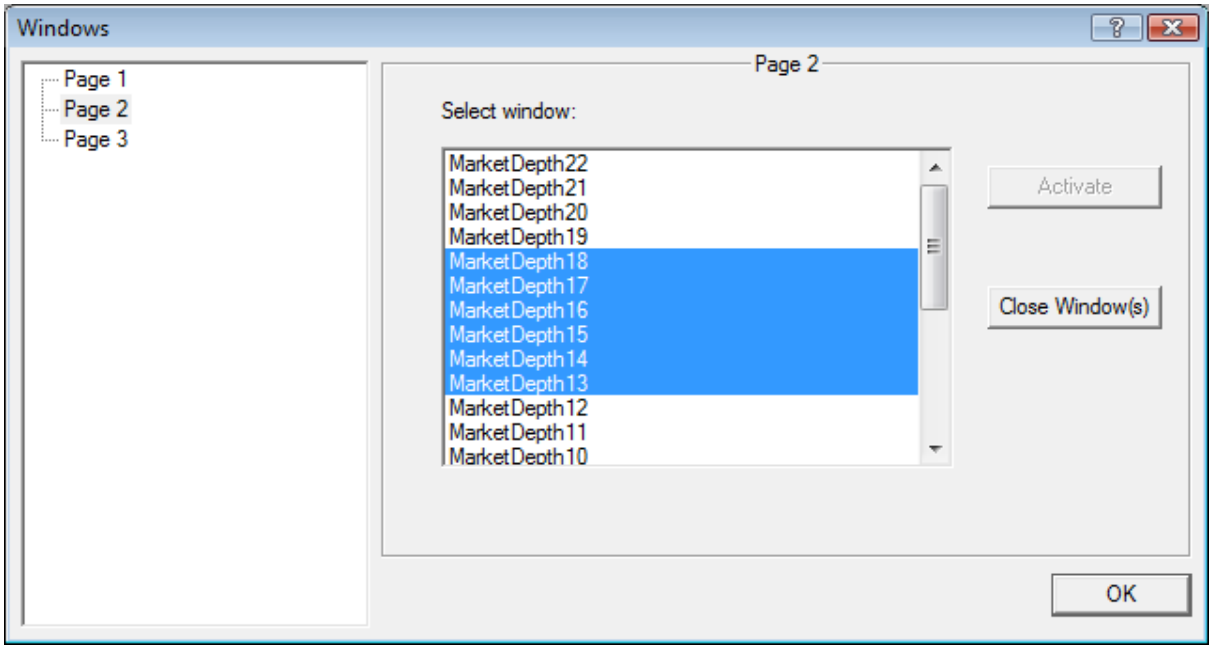
Note You can also click on the **Close** button in the upper right corner of the document window:

- If there are unsaved changes to the document, you might be asked if you want to save the changes. Click **Yes** to save the changes, or **No** to discard them.

Note You can save the answer to this question. For example, if you always want to discard all changes, select the check box **Don't ask this question again** and click **No**. Professional will then automatically discard all changes to every document when you close it. This is also the default setting in Professional. You can change this setting later: See Default Responses Settings on page 346.
We recommend to always save changes in a workspace instead of a single document file.

To close several document windows at once

- On the **Window** menu, click **More Pages**.
- On the left side of the dialog, select the virtual page that contains the document windows.
- On the right side of the dialog, select the document windows that you want to close in the **Select window** list.



- Click **Close Window(s)**.

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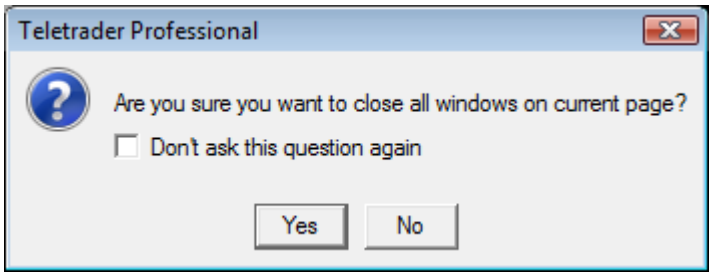
To close all documents on a virtual page

- On the **Window** menu, click **Close Windows on Current Page**.
- Click **Yes** to confirm the warning message.

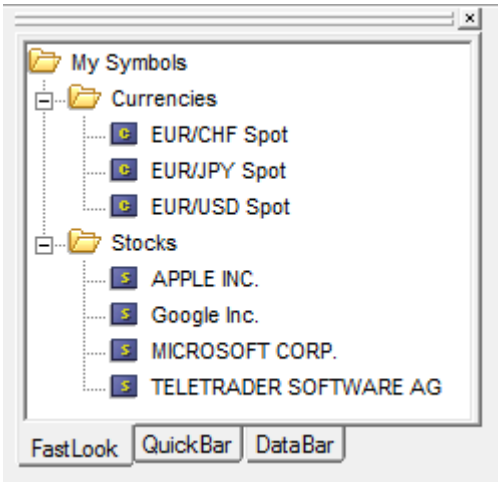


Note You can save the answer to this warning by selecting the check box **Don't ask this question again** before clicking **Yes** or **No**. To later change this setting, see Default Responses Settings on page 346.

FastLook

FastLook offers you a way to store symbols that you use frequently independent of a workspace. It is part of the navigation pane. Similar to the QuickBar, it holds lists of symbols that can be grouped into folders. However, unlike the QuickBar, you can define and change these lists yourself.

By default, FastLook is empty. If you want to store some symbols there, you first have to add them. You can also organize them in folders to keep a better overview. Symbols and folders in FastLook are stored independent of every workspace and can therefore also be accessed from any workspace. You can open any type of document for a FastLook symbol.



If you want to customize FastLook, you can change the font, colors and symbol display (ticker or name). See Customizing FastLook on page 142.

FastLook is automatically displayed as a part of the navigation pane when you start TeleTrader Professional. If the navigation pane is not visible because it was closed manually, or if another view is chosen to be displayed, follow the steps below to display FastLook.

To display FastLook

- On the **View** menu, click **Navigation Pane**.

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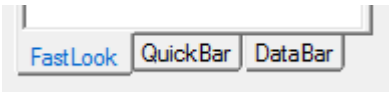
- In the navigation pane, click on the tab **FastLook**.



Adding Folders and Symbols to FastLook

All symbols that you add to FastLook are stored there automatically, independent of any workspace. Thus, they are available in any workspace. Symbols remain in FastLook until they are removed (see Organizing FastLook Items on page 168).

You can create folders in FastLook to keep a better overview of your symbols. All folders that you create are part of the root folder **My Symbols**. This folder cannot be removed, since it holds all other items.

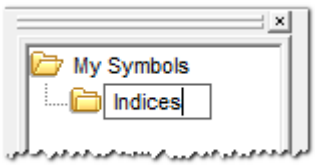
> **Note** You can also add symbols to FastLook with drag and drop. See Copying Symbols on page 75.

To add a symbol to FastLook

- Right-click on the folder where you want to add the symbol and choose **Insert Symbols**.
- In the **Symbol Search** dialog, enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol(s) that you want to insert.
- Click **OK**. The symbol is inserted into the selected folder.

To add a folder to FastLook

- Right-click on the folder that should be the parent folder and choose **Insert Folder**.
- A new folder is added inside the parent folder.
- Right-click on the new folder and choose **Rename**.
- Enter a name for the folder and press the ENTER key.



Opening Symbols from FastLook

You can open every symbol that is stored in FastLook in a document. You can either use the default document and template, or choose the document type and template that will be used.

To open a symbol from FastLook with the default document type

- Double-click on the symbol.

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- A new chart document is opened for the symbol. The document is formatted with the default template.

> **Note** You can change the default document that is opened. See Double-Click Actions Settings on page 346.

To open a symbol from FastLook with other document types

- Right-click on the symbol and choose **Open**.
- Choose the document type from the list.
- A new document is opened for the symbol. The document is formatted with the default template.

> **Note** You can open separate documents for more than one symbol simultaneously. Select the symbols by clicking on them while keeping the CTRL key pressed, then follow the steps above. If you select several symbols and open a price page, watch list or time and sales document for them, by default all symbols will be combined in one document. If you keep the CTRL key pressed while choosing the document type, each symbol will be opened in a separate document.
> If you open a new chart document while selecting several symbols, holding the CTRL key will open overlaid symbols in one chart pane. To open every symbol in its own chart pane, hold both the CTRL + SHIFT while choosing the document type **Charts**.

To open a symbol from FastLook using a template

- Right-click on the symbol and choose **Open**.
- Right-click the document type you want to use (or move the mouse pointer to the document type and wait for a moment) – an additional menu will appear to the right.
- Choose a template from the list.
- A new document is opened for the symbol. The document is formatted with the chosen template.

To open a list of related symbols from FastLook

- Right-click on the symbol and choose **Related Symbols**.
- Choose from the list which symbols should be shown. See also Opening Related Symbols in a Price Page on page 71.

To open all symbols of a folder from FastLook

- Right-click on the folder and choose **Open**.
- Choose the document type from the list.
- A new document is opened for every symbol. If you have chosen to open a price page, watch list or time and sales document, all symbols of the folder will be combined into one document. Otherwise, a separate document for each symbol is created.

Organizing FastLook Items

You can copy FastLook symbols between the FastLook folders, sort the folder content alphabetically, collapse and expand folders, print a list of all folders and symbols and of course also remove symbols or folders from FastLook.

To copy a symbol between folders with drag and drop

- Click on the symbol that you want to copy.

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- Hold the mouse button down and move the symbol. The mouse pointer changes:

- Drag the symbol to another folder and release the mouse button to drop it there. The symbol is inserted at the end of the folder list.

> **Note** You can also copy a symbol from FastLook to any Professional document with drag and drop. See Copying Symbols on page 75.

To sort the content of a folder in FastLook

- Right-click on the folder and choose **Sort Folder**.

To activate / deactivate automatic sorting for FastLook

- Right-click anywhere in FastLook and choose **Sort**.

> **Note** When automatic sorting is activated, the option is highlighted with a check mark.

To collapse and expand a folder in FastLook

- Right-click on the folder and choose **Collapse Folder** or **Expand Folder**.

> **Note** You can also double-click on the folder to collapse or expand it.

To print a list of FastLook folders and symbols

- Right-click anywhere in FastLook and choose **Print**.

To remove symbols or folders from FastLook

> **Warning** *This action cannot be undone.* When you remove a folder from FastLook, all symbols that are contained in this folder will be removed too. You cannot remove the root folder **MySymbols**.

- Right-click on the symbol or folder and choose **Delete**.

Sending Workspaces, Virtual Pages or Documents via E-Mail

You can share your workspaces, virtual pages or documents with other Professional users via e-mail. You can also send a chart picture to anyone who does not have access to a TeleTrader Professional installation.

When sending e-mails from within Professional, you have two possibilities: You can use your *default e-mail client* with your existing account settings and address book, or you can use the *internal e-mail client*. The internal e-mail client must be configured with your account data before it can be used, and it uses an internal address book for your contacts.

> **Note** E-mail notifications that are triggered by alerts will always be sent using the internal e-mail client. See E-Mail Action on page 335.

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To use your default e-mail client

- On the **File** menu, activate **Send E-mail > Use Default E-Mail Client**.
- The option will be highlighted with a check mark when it is activated.

> **Note** All e-mails except e-mail notifications triggered by alerts will be sent using your standard e-mail client.

To configure and use the internal e-mail client

- On the **File** menu, deactivate **Send E-mail > Use Default E-Mail Client**.
- The check mark next to the option should disappear.
- On the **Tools** menu, choose **Options** and click on the options sheet **E-Mail Settings** on the left side of the dialog.
- Configure the settings for your internal e-mail account: See E-Mail Settings on page 348.

To send a workspace, virtual page or document as attachment

- On the **File** menu, click **Send E-mail**, and then choose the appropriate command:

Document as Attachment	Attach the active Professional document to an e-mail message
Virtual Page as Attachment	Attach the active virtual page to an e-mail message
Workspace as Attachment	Attach the open workspace to an e-mail message

- Depending on if you are using your default e-mail client or the internal client, proceed as follows:
  - *Default e-mail client*: A new e-mail message appears. Enter the e-mail address of the recipient(s) and click **Send**.
  - *Internal e-mail client*: Choose a recipient from the menu, or create a new recipient address in the **Address Book** (for more information about using the internal address book see Using the Internal Address Book on page 170).

To send a chart as a picture file via e-mail

- On the **File** menu, choose **Send E-mail > Image**.

> **Note** You can also right-click on the chart and select **E-Mail Chart**.

- Depending on if you are using your default e-mail client or the internal client, proceed as shown above for sending documents as attachment.

> **Note** The TeleTrader logo is added as a watermark to the chart picture.

Using the Internal Address Book

When you are using the internal e-mail client, you have to add the recipients of your e-mail (contacts) to the internal address book before you can send a document, virtual page or workspace to them. You can also import external contacts from a text file or comma separated values file. The internal address book only offers basic functionalities – for more functionalities, use your default e-mail client.

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To access the internal address book

- When sending workspaces, virtual pages or documents from within Professional (see Sending Workspaces, Virtual Pages or Documents via E-Mail on page 169) choose the command **Address Book**.
- When configuring e-mail notifications for alerts, click on the labels **To**, **Cc** or **Bcc** in the **Alert Action Editor** (see E-Mail Action on page 335).

To create a new contact

- In the **Send E-mail** dialog, click **New**.
- To set the name and address of the new contact, click on the default values **First Name**, **Last Name** or **E-mail Address**.
- Type the name or address and press ENTER.

To choose a contact

- In the **Contacts** list, select the recipient of your e-mail.
- Click **To**, **Cc** or **Bcc** to add him / her to the appropriate field.

To delete a contact

- In the **Contacts** list, select the contact.
- Click **Delete**.

To import external contacts

> **Note** The import file must be a text file or comma separated values file with three columns that contain the *First Name*, *Last Name* and *E-Mail Address* of your contacts (in this order).

- In the **Send E-mail** dialog, click **Import**.
- In the **Import E-mail Addresses** dialog, click **Browse**.
- In the **Import** dialog, select the file that you want to import and click **Open**.
- If the first row of your import file does not contain data, select **First row is heading**.
- You can now see a preview of the contacts that will be imported. If you are satisfied with the results, click **Import**.

To export your address book

See E-Mail Settings on page 348.

Multi-Monitor Systems

If you are working with more than one monitor, there are several ways to ideally use all the screen space available to you. You can stretch the Professional main window across multiple monitors, create an additional Professional main window to position on another screen, or detach some document windows from your main window to position them freely on the screen(s).

All settings and window positions, including additional main windows and detached windows, can be saved in a workspace. See Creating and Saving Workspaces on page 150.

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To stretch the Professional main window across multiple monitors

- Make sure that the Professional main window is not maximized or minimized. If it is, click the **Enlarge (Reduce)** button in the upper right corner of the main window.

- Place the mouse pointer at the border of the main window. The mouse pointer changes:

- Hold the mouse button down and move the mouse to widen / shorten the window. You can now stretch the window across multiple monitors.

> **Note** If you open a new document inside a Professional window that is stretched across monitors, the document will be shown on the monitor where the mouse pointer is positioned at the moment of creation.

To create an additional Professional main window

- On the **File** menu, click **New Professional**.
- An additional Professional main window is created.

> **Note** You can use this window like any other Professional window to display documents, virtual pages and so on. The documents and virtual pages of each Professional main window are independent of each other. However, if you create and save a workspace, all visible main windows are included in the workspace. You cannot create separate workspaces for additional Professional windows.

To create a free floating document window

A free floating window can be positioned on any screen independent of the Professional main window. To create a free floating window, you have to detach the document window.

See Arranging Document Windows on the Screen on page 162.

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Charting

Technical analysis methods are based on evaluating past price movements, patterns and trends to forecast the future development of a security. To identify and interpret such patterns, charting techniques are used to visualize the historic data of a symbol on the screen.

TeleTrader Professional offers a lot of tools to work with charts. This section describes mainly how to set up and customize the chart itself. If you want to learn how to insert and use the different drawing tools and analysis tools (studies), these are explained in separate sections: Drawing Tools on page 244 and Analysis Tools on page 299.

Elements of a Chart

Each chart document is made up of certain elements. Some of the elements are always present, like price and time scales, some elements must be added by you, like symbols (time series), studies and drawing objects.

Price and time scales provide the coordinate system for the plotted data

A chart shows the visual representation of a symbol's historical and current data (*time series*). For each point in time, the price(s) of the symbol are plotted on the screen. To see how the data points relate to each other, charts use a coordinate system of time and prices.

Times are shown on the *horizontal scale*. Depending on the data compression that you use (for example, daily, intraday or tick compression), the intervals shown on the time scale will be different. On the time scale, you can find out for example at which point in time a certain price level was reached.

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Prices are shown on the *vertical scale*. Here, you can find out what the current price for a symbol is and what prices were reached in the past. The price scale can be adjusted, so that it shows for example percentages or logarithmic prices.

Chart panes and sheets are used to organize the contents of a chart

When you want to display different symbols in one chart, for example to compare them, or add other chart objects, such as studies, you can organize the contents of your chart into several chart panes or sheets.

Every chart consists of at least one *chart pane*. You can add other panes as well. Each pane has a header that shows which objects are displayed in this pane. The currently *active pane* is indicated by a colored rectangle at the left edge of the pane header. The appearance (colors, grid) of every pane and its header can be freely configured.

You can also use *sheets* to organize the contents of a chart, like in price pages. Each sheet can be customized differently, including its data compression and chart type. In combination with the chart window split, you can use sheets to display for example two different data compressions for a symbol at once.

Add chart objects as you need them

In addition to symbols, you can also display other objects necessary for technical analysis on a chart. The most important examples are drawing objects, like trend lines or Fibonacci Retracements, and studies, like the Moving Average or different oscillators. You will learn more about these tools in the sections Drawing Tools on page 244 and Analysis Tools on page 299.

Creating Charts and Opening Documents from a Chart

To display a chart, you have to open a symbol in a new chart document. You can also do this from the QuickBar, from Symbol Search results, from other documents like price pages or from the symbols you have stored in FastLook. You can also open other types of documents from a chart – for example time and sales.

To open a chart from the QuickBar

See Opening Symbols from the QuickBar on page 31

To open a chart from search results

See Opening Symbols from the Search Results on page 38

To open a new empty chart document and insert a symbol there

See Opening Symbols in New Documents on page 64

To open a chart from an existing document

See Opening Symbols from Existing Documents on page 66

To open a chart from FastLook

See Opening Symbols from FastLook on page 167

To open other documents from a chart

See Opening Symbols from Existing Documents on page 66

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Changing the Data Compression

In a chart, Professional plots many data points on the screen as bars, candlesticks or in some other form of visualization (see Changing the Chart Type on page 176 for an overview of the available visualizations). For real-time quotes, data is transmitted internally from the exchanges as tick by tick data – this means, whenever a trade occurs, a new data point is added. You can of course show the flow of tick by tick data in a chart, but more often you will want to get an overview over a longer period of time – in this case, the data will be *compressed* for you.

Compression means that Professional looks at a group of ticks, for example all ticks of a day, but uses only up to four of these values to draw the next data point (bar, candlestick etc.): The first and last prices of the day (*Open* and *Close*), and the highest and lowest price of the day (*High* and *Low*). Some chart types, such as line charts, only use the *Close* price – in that case, all the data of a whole day is compressed into a single value.

There are two different types of compression:

- *Time compression*: This form of data compression is used in most charts. Every data point, bar, candlestick etc. represents a fixed period of time, for example a day, a week or 10 minutes. For every period, the *Open*, *High*, *Low* and *Close* prices are determined. With this information, the next data point (bar, candlestick, Point and Figure box etc.) for this period is drawn on the chart as soon as the period is over. For example, if you use a one-hour candlestick chart, at the end of each hour a new candle is added. Time compressions include **Intraday**, **Daily**, **Weekly** and **Monthly** compressions. The most common compression is the **Daily** compression, which is also used as a default in TeleTrader Professional.
- *Tick compression*: This means that several ticks (trades) are grouped together and compressed to form a data point (for example, a bar or candlestick). If you use for example a tick compression of 10 ticks, then all ticks are grouped in sets of ten. The *Open* price of a 10-tick bar is the first tick, the *Close* price is the tenth tick. The *High* and *Low* prices are the highest and lowest prices in the set of ten ticks, respectively. Tick compressions do not have a linear time scale – depending on the frequency of incoming ticks, a 10-tick bar can comprise a period of seconds, minutes or even days (for infrequently traded securities). **Tickbar** is the only tick compression available; the "compression" **Tick by Tick** in fact shows uncompressed data.

The current data compression is shown in the upper right corner of the chart header.

To change the data compression of a chart

- Click on the corresponding icon in the **Chart** toolbar:

	Tick by Tick	Every tick (last price) of the symbol is plotted as a separate data point. Use this setting if you want to see uncompressed data (for example, real time quotes as they come in).
	Tickbar	A number of ticks are compressed to form a bar (or other plotted data point). You can set the number of ticks that are used for each bar. In the chart header, you can see the number of remaining ticks until the next bar is drawn.
	Intraday	All ticks that occur in an interval of a number of minutes or hours are compressed to form a bar (or other plotted data point). You can choose the time interval that is used for each bar. In the chart header, you can see the remaining time until the next bar is drawn.
	Daily	All ticks of a day are compressed to form a bar (or other plotted data point).
	Weekly	All ticks of a week are compressed to form a bar (or other plotted data point). For securities that are also traded on weekends (Forex, Futures) the weekly bar starts with Sunday's *Open* price.
	Monthly	All ticks of a month are compressed to form a bar (or other plotted data point).

- Depending on your choice, you will have to add some details about the data compression that you wish to apply to the chart:
  - If you choose a *tick by tick*, *daily*, *monthly* or *weekly* compression, the data compression of the chart will change immediately.
  - If you choose a *tickbar* compression, you will be asked to enter the number of ticks that are used for each bar:

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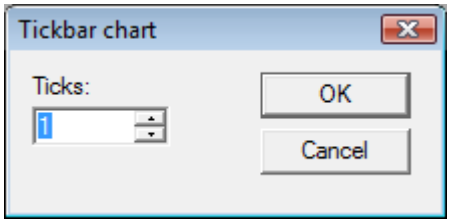
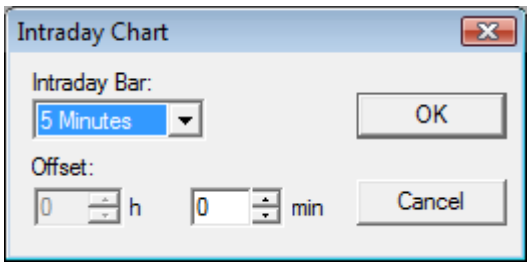


- If you choose an *intraday* compression, you will be asked to choose the time interval that is used for each bar. You can also enter an **Offset** value, which means that the time series will be offset by the number of hours or minutes that you enter. (For example, if the first 60-minute bar would be at 9:00 to 10:00, and you offset it by 5 minutes, the first bar would then be at 8:05 to 9:05, the second bar at 9:05 to 10:05 and so on.)



Note You can also choose the most common tickbar or intraday compressions by clicking on the arrow next to the **Tickbar** or **Intraday** icon.

Alternatively, you can also change the data compression of a chart with a menu command or in the properties dialog:

- On the **Chart** menu, click **Compression** and choose the data compression that you want to use.
- In the **Chart Properties** dialog, choose **General > Type**. See also Customizing the Chart on page 216.

Changing the Chart Type

There are several ways to plot the price data of a symbol on the screen. Each type of visualization is called a *chart type*. Some chart types are fairly common and easy to understand, like line charts, bar charts or candlestick charts, other visualizations are more complex, like Point and Figure charts or the Japanese variations Three Line Break, Renko and Kagi. Every chart type has its advantages and disadvantages – it is up to you to decide which type suits you best for a specific task. By default, Professional uses candlestick charts.

All chart types used in TeleTrader Professional only need the prices of a symbol as an input: Some chart types only use the *Close* prices of a period, others also include *Open*, *High* and *Low* prices. Instead of the *Close* price, you can also use the *Settlement* price. If you do not want to use the trade prices on your chart, you can also plot bid or ask prices for some types of securities.

Bear in mind that a chart is always a combination of its chart type and its data compression. A 10-ticks bar chart will look differently than a daily bar chart, and is certainly different than a daily Kagi chart. Also see Changing the Data Compression on page 175.

To change the chart type

- Click on the arrow next to the **Chart Type** icon in the **Chart** toolbar.

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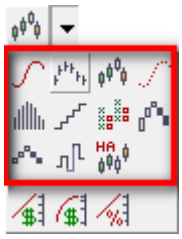

Note You can also change the chart type with the menu command **Chart** > **Plot Type**.

- Choose the chart type that you want to use:

	Line Chart	The *Close* prices of the symbol are plotted as a continuous, smoothed line. This is a **Finance** chart type.
	Bar Chart	The *Open*, *High*, *Low* and *Close* prices of a symbol are plotted as bars. This is a **Finance** chart type.
	Candlestick Chart	The *Open*, *High*, *Low* and *Close* prices of a symbol are plotted as candlesticks. This is a **Finance** chart type.
	Point Chart	The *Close* prices of a symbol are plotted as points. This chart type is similar to the line chart, except that the data points are not connected with a line. This is a **Finance** chart type.
	Histogram Chart	The *Close* prices of a symbol are plotted as vertical columns. This is a **Finance** chart type.
	Stair Step Chart	The *Close* prices of a symbol are plotted as steps. This chart type is similar to the line chart, except that the data points are connected with rectangular lines (steps). This is a **Finance** chart type.
	Point & Figure Chart	The prices of a symbol are plotted independent of time in columns of X's and O's. You can freely configure the box size and reversal amount.
	Three Line Break Chart	The prices of a symbol are plotted independent of time in rising or falling columns (lines). A change in trend (reversal) takes place when the price breaks the high/low of the three previous columns (lines).
	Renko Chart	The prices of a symbol are plotted independent of time with so-called "bricks" (boxes). A new brick in either direction is drawn when prices exceed the previous brick by at least the brick size, which can be configured freely.
	Kagi Chart	The prices of a symbol are plotted independent of time with vertical lines that show the direction of a price movement and horizontal lines that show a reversal. A reversal takes place when the price changes by at least the filter amount, which can be configured freely.
HA	**Heikin Ashi Chart**	Heikin Ashi-transformations of the *Open*, *High*, *Low* and *Close* prices of a symbol are plotted as candlesticks.

Note Some chart types are not available for specific data compressions. For example, you cannot show tick by tick data as a bar or candlestick chart.

To change the chart type configuration

- Right-click on the chart and choose **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Display**. For example: **Pane 1 > DAX > Display**.
- On the right side of the dialog, select the chart type that you want to use from the **Chart mode** list.
  If you choose the chart mode **Finance**, you have to select the chart type from the sample pictures (**Line**, **Bar**, **Candlestick**, **Histogram**, **Points** or **Stair Step**).

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- Choose what prices should be used for plotting the chart:

Chart Open – High – Low – Close	*Open*, *High*, *Low* and *Close* prices are used to plot the chart (if appropriate for the chosen chart type).
Chart Open – High – Low – Settlement	Instead of the *Close* price, the *Settlement* price of a symbol is used to plot the chart.
Chart Bid (OHLC)	Instead of the last prices, the bid prices are used to plot the chart (*Open*, *High*, *Low* and *Close*).
Chart Ask (OHLC)	Instead of the last prices, the ask prices are used to plot the chart (*Open*, *High*, *Low* and *Close*).

- For some chart types (**Point & Figure**, **Renko**, **Kagi**), you can adapt additional settings, like the box size and reversal amount in Point and Figure charts. For details, see Point and Figure Charts on page 181, Renko Charts on page 183 or Kagi Charts on page 184.

Finance Charts

The Finance chart types all use a linear time scale. Most plot the *Close* prices of a symbol; bar charts and candlestick charts additionally plot the *Open*, *High* and *Low* prices.

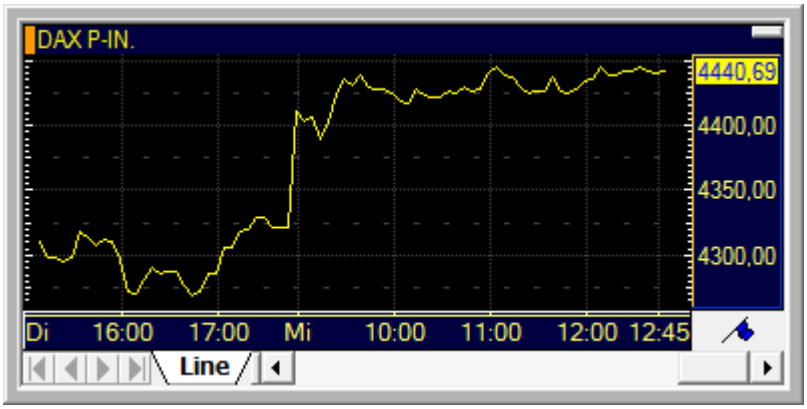
Linear time scale means that the every data point that is plotted on the chart can be matched to a specific point in time, and that those points in time are shown on the horizontal time scale in regular intervals. Some other chart types, like Point and Figure, Three Line Break, Renko and Kagi charts use a nonlinear representation of time, which is to say that a data point can typically not be matched exactly to one point in time, and that some periods may pass without any data being plotted on the screen at all. This will never be the case in Finance charts: For every period where trading occurred, a data point will be added to the chart. For example, if you use a 10-minute bar chart, a new bar will be drawn every ten minutes. For details about different data compressions, see Changing the Data Compression on page 175.

> **Note** The above is not true when you use a tick-based compression (**Tickbar**) in your chart, as this kind of data compression can't use a linear time scale per definition.

Finance charts do not need specific additional settings; you can however change the colors used in the chart: See Changing the Line Style on page 219 and Color-Coding Price Relations, Intervals or Trends on page 220.

Line charts

In line charts, only the *Close* prices of the symbol are shown. Each *Close* price is plotted as a data point, and the points are then connected with a continuous, smoothed line.



This is the most basic chart type. It offers a simple, uncluttered view of the price development of a symbol.

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Bar charts

In bar charts, the *Open*, *High*, *Low* and *Close* prices of a symbol are shown. Each data point consists of these four prices. The *High* and *Low* prices are at the upper and lower boundaries of a bar. The *Open* price is shown at the left side of the bar, and the *Close* price at the right side.

This chart type is widely used. It offers more information about the price development of a symbol than the line chart in a condensed view.

Candlestick charts

Candlestick charts, like bar charts, also show the *Open*, *High*, *Low* and *Close* prices of a symbol. A candlestick consists of a body, that is drawn between the *Open* and *Close* prices, an upper shadow (*High*) and a lower shadow (*Low*). The body is green if the *Close* price is higher than the *Open* price, and red if the *Close* price is lower than the *Open* price. If the *Open* and *Close* prices are equal, the candlestick has no body and is shown in a different color.

Candlestick charts were originally used in Japan since the 18th century. They have since become very popular. In essence, the show the same information as a bar chart, but in a different visual format. With candlestick charts, you can look for chart patterns like the *Hammer* or the *Morning Star* (for details about the available studies, consult the Study Reference).

Point charts

Point charts plot the *Close* prices of a symbol as points. This chart type is similar to the line chart, in that each *Close* price is plotted as a data point. In contrast to line charts, the separate data points are not connected with a line.

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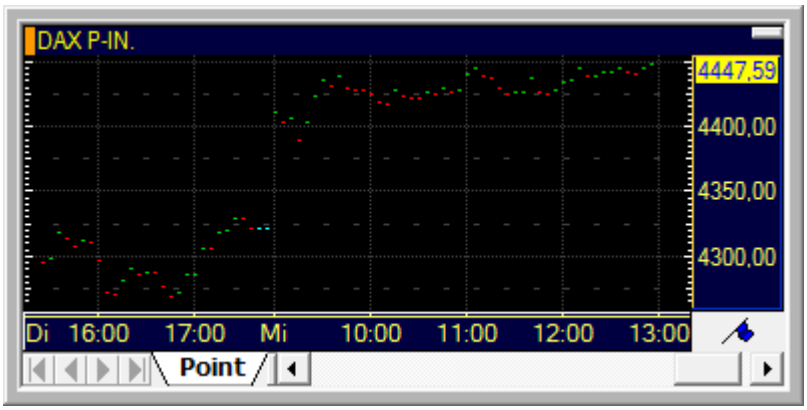
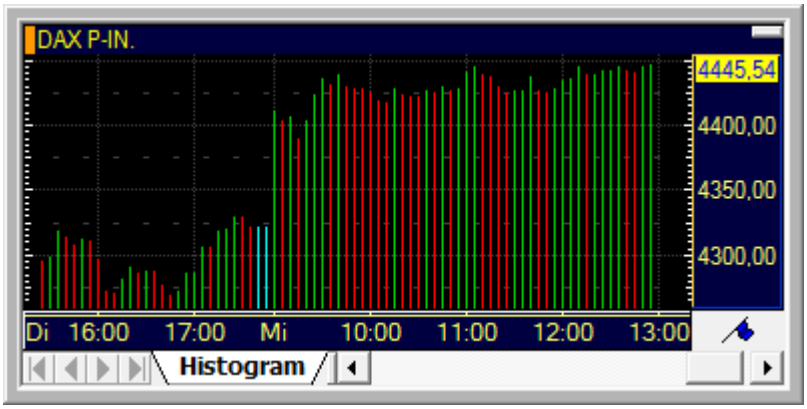


This chart type offers the same information as a line chart. It does not add any data to form a line, though.

Histogram charts

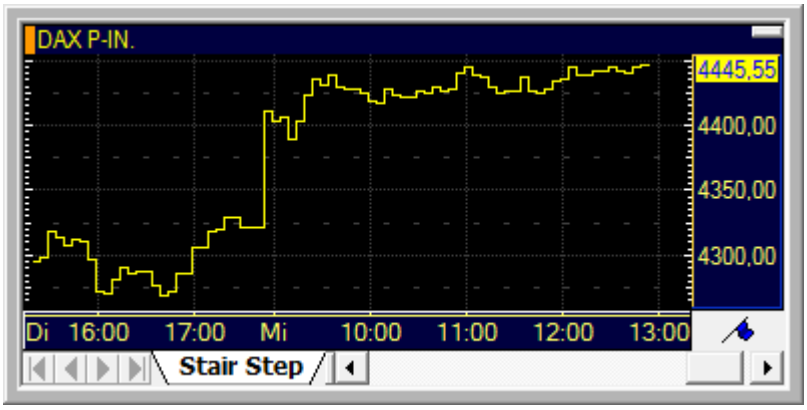
Histogram charts show the *Close* prices of a symbol as vertical columns.



This chart type offers the same information as a line or point chart in a different visualization.

Stair Step charts

In stair step charts, the *Close* prices of a symbol are plotted as steps. This chart type is similar to the line chart, except that the data points are connected with rectangular lines (steps) instead of a smoothed line.



This chart type offers the same information as a line, point or histogram chart in a different visualization.

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Point and Figure Charts

In Point and Figure charts, the prices of a symbol are plotted in columns of X's and O's. Rising prices are plotted as X's, whereas falling prices are plotted as O's.

A new additional "box" (X or O) in an existing column is only plotted when the price moves at least as much as the *box size* that can be configured freely for each symbol. Each column can only contain either X's or O's. A column therefore signifies a trend in one direction (X's show an upwards trend, O's show a downwards trend).

A new column is always drawn in the opposite direction. For example, if the last column contained only X's, the next column will contain O's. Before a new column can be drawn, a *reversal* must take place. This means that the price must move into the opposite direction for at least the reversal amount. The reversal amount is measured in numbers of boxes, for example a reversal amount of 3 means that the price must drop for at least three times the box size before a new column of O's will be established. In other words, until a new column would not hold at least 3 boxes, it is not drawn in this example.

A Point and Figure chart therefore does not show a linear representation of time. If the price movements are small and the box size is large, it can take a longer time before a new box in either direction is drawn. A trend reversal takes even longer, but is therefore also more significant as soon as it shows on the Point and Figure chart.

You can use different data compressions in a Point and Figure chart (daily, intraday, ticks etc.): At the end of each period, the price change of the previous period is determined, and new boxes or columns are added to the chart only if the price changes are significant enough to justify this, according to the rules outlined above. For example, if you use a 5-minute Point and Figure chart, Professional will look at the *High* and *Low* prices of the 5-minute interval and eventually add new boxes to the chart if there have been significant price moves. Therefore, a 5-minute Point and Figure chart looks differently than a daily Point and Figure chart, for example.

Tip

We recommend to change the chart properties setting under **General > Time Region** to a fixed period when using Point and Figure charts. If you use a dynamic time region, for example a fixed number of records, the Point and Figure chart will be recalculated every time a new record is added and the oldest record is taken out of the chart. Therefore, the display of historical data in the chart could vary over time, as it also depends on the initial data in the chart. Use the option **Period (from-to)** to avoid this.

To change the box size and reversal amount

- Right-click on the Point and Figure chart and choose **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Display**. For example: **Pane 1 > DAX > Display**.

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- On the right side of the dialog, clear the **Auto Box Size** check box so that you can enter your own box size.

> **Note** When the **Auto Box Size** feature is activated, it always chooses a reasonable box size automatically, depending on the symbol, the data compression, and the loaded data records.

- In the **Box Size** field, enter the value that the price has to move before a new box is added to the chart.
- In the **Reversal** field, change the reversal amount by clicking the up or down arrows to the number of boxes that the price has to move into the opposite direction before a reversal takes place.

> **Note** You can save your settings as default for the current symbol and data compression by clicking the **Set As Default** button.

Three Line Break Charts

Three Line Break charts are similar to Point and Figure charts. Like them, they are plotted independent of time, which is why the time scale on these types of charts is not shown in a linear way. The prices of a symbol are displayed as rising and falling columns, the so-called *lines*.

New lines into the same direction are added only if the *Close* price of the chosen period (for example, the closing price of the day for daily charts) exceeds the previous high for rising lines, or drops below the previous low for falling lines. If no new highs or lows are reached, nothing is drawn on the chart for that day (or other chosen period – see also Changing the Data Compression on page 175).

A *reversal* into the opposite direction (for example, a new falling line if the previous line was rising) can only take place when the price for that period exceeds the highs of the three previous lines (reversal from falling to rising lines) or drops below the lows of the three previous lines (reversal from rising to falling lines). This is the reason why this type of chart is called "Three Line Break".

In comparison with Point and Figure charts, the Three Line Break chart has the advantage that there is no fixed reversal amount. Rather, the reversal limit is taken from the past price development dynamically. Like in Point and Figure charts, new trends reveal themselves late, but the signals generated by a Three Line Break chart can be more significant than the ones given by a classic bar chart, for example.

Three Line Break charts were originally developed and used in Japan. To find more detailed information about them, see for example Steve Nison: Beyond Candlesticks. John Wiley & Sons, 1995.

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Tip We recommend to change the chart properties setting under **General > Time Region** to a fixed period when using Three Line Break charts. If you use a dynamic time region, for example a fixed number of records, the Three Line Break chart will be recalculated every time a new record is added and the oldest record is taken out of the chart. Therefore, the display of historical data in the chart could vary over time, as it also depends on the initial data in the chart. Use the option **Period (from-to)** to avoid this.

Renko Charts

Renko charts are plotted with so-called *bricks* (rising or falling boxes). They are similar to Point and Figure charts, as they also do not show a linear representation of time and are used with different (configurable) brick sizes.

Every brick on a Renko chart has the same size, independent of rising or falling prices. A new brick is drawn when the price of a symbol changes by more than the brick size in the chosen period of time (for example during a day for daily charts, or 10 minutes for intraday charts – see also Changing the Data Compression on page 175). If prices change several times the brick size, then as many bricks as needed to show the price movement are plotted on the chart for this period. If the price change is smaller than the brick size, then nothing is drawn for this period. The appropriate brick size is initially determined automatically, but can later be changed in the chart properties.

A movement into the opposite direction (reversal) takes place when the price moves one brick down from the previous (rising) brick. Unlike Point and Figure or Three Line Break charts, the Renko chart does not have additional reversal conditions. Therefore, a reversal can happen faster than in those chart types, but there can be also more false signals. Renko charts are primarily used in trending markets.

Renko charts were originally developed and used in Japan. To find more detailed information about them, see for example Steve Nison: Beyond Candlesticks. John Wiley & Sons, 1995.

To change the brick size

- Right-click on the Renko chart and choose **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Display**. For example: **Pane 1 > DAX > Display**.
- On the right side of the dialog, choose **Price Step** to enter the absolute value that the price has to move before a new brick is added to the chart, or choose **Percentage** to enter the brick size as a percentage.

Note You can save your settings as default for the current symbol and data compression by clicking the **Set As Default** button.

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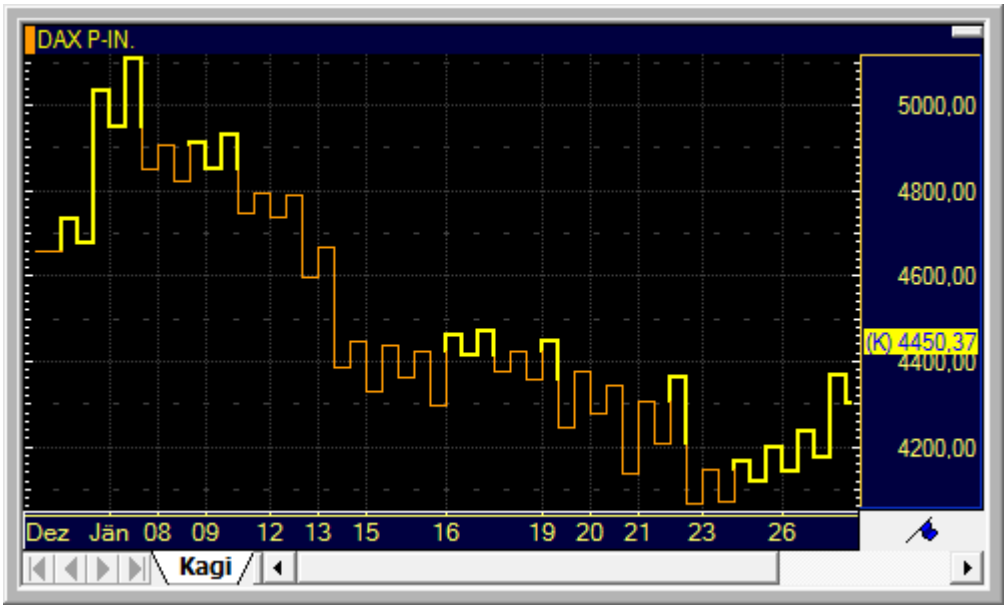
Kagi Charts

Kagi charts are plotted with vertical and horizontal lines. The vertical lines show the direction of a price movement, and the horizontal lines show a reversal.



As long as the price does not change direction, the Kagi line is drawn into the same direction (up or down) as new prices come in. When the price changes direction, a reversal takes place only when the price change exceeds the *filter amount*. At each reversal, a horizontal line is added to the chart and the line continues vertically into the new direction.

In addition, a Kagi line can be *thick or thin*. If a Kagi line is thin, it will change to a thick line when the price moves above the previous high (shown by the horizontal line at the reversal). If a thick Kagi line falls below the previous low, the line turns thin again. The change from a thick to a thin line is generally thought to generate a sell signal, whereas the change from a thin to a thick line generates a buy signal.

Like Point and Figure charts, as well as Three Line Break and Renko charts, the Kagi charts are plotted independent of time. If in the chosen period (data compression) the price change is not enough to either continue the current line or cause a reversal, then nothing will be drawn on the chart. Therefore, it is important what filter amount is chosen for reversals. Initially, this value is set automatically according to the symbol displayed in the chart document, but you can of course change it in the chart properties.

Kagi charts were originally developed and used in Japan. To find more detailed information about them, see for example Steve Nison: Beyond Candlesticks. John Wiley & Sons, 1995.

Tip We recommend to change the chart properties setting under **General > Time Region** to a fixed period when using Kagi charts. If you use a dynamic time region, for example a fixed number of records, the Kagi chart will be recalculated every time a new record is added and the oldest record is taken out of the chart. Therefore, the display of historical data in the chart could vary over time, as it also depends on the initial data in the chart. Use the option **Period (from-to)** to avoid this.

To change the filter amount

- Right-click on the Kagi chart and choose **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Display**. For example: **Pane 1 > DAX > Display**.
- On the right side of the dialog, choose **Price Step** to enter the absolute value that the price has to move into the opposite direction before a reversal takes place, or choose **Percentage** to enter the filter amount as a percentage.

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Note You can save your settings as default for the current symbol and data compression by clicking the **Set As Default** button.

Heikin Ashi Charts

Heikin Ashi charts are constructed very similar to candlestick charts. The difference is that instead of the normal *Open*, *High*, *Low* and *Close* prices, like in a candlestick chart, the Heikin Ashi chart uses transformations of these prices. The plotting with this transformed prices is then done in the same way as for normal candlestick charts (see Finance Charts on page 178).

The Heikin Ashi transformations also use values from the previous candle:

Heikin Ashi Value	Transformation	Description
H-Close	(Open+High+Low+Close)/4	Average price of the current candle
H-Open	(Open[1] + Close[1])/2	Midpoint of the previous candle
H-High	Max(High, H-Open, H-Close)	Highest value of the given list
H-Low	Min(Low, H-Open, H-Close)	Lowest value of the given list

Because it also uses past data for calculating the current candle, a Heikin Ashi chart reacts a bit slower as a normal candlestick chart. On the other hand, it can be read more easily because an uptrend shows only candles with an unfilled body, and a downtrend only candles with a filled body.

The usual candlestick patterns also apply to Heikin Ashi charts. In addition, it is believed that unfilled candles with no lower shadow signal a strong uptrend, and filled candles with no upper shadow signal a strong downtrend.

Changing the Type of the Price Scale

You can choose what type of price scale is used in a chart pane: An arithmetic, logarithmic or percentage scale.

Each chart pane can have a different type of price scale.

Note You cannot change the type of the second price scale.

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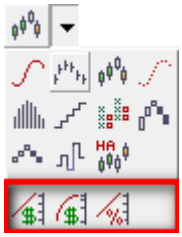
To change the type of the price scale

- Click on the arrow next to the **Chart Type** icon in the **Chart** toolbar.



- Choose the scale type that you want to use:

Linear Price	Use an *arithmetic scale* that is divided into units of equal distance. This scale is useful to represent absolute increments of change.
Logarithm Price	Use a *logarithmic* (or *ratio*) *scale* that is divided into units where the ratio difference between two numbers is always represented by the same distance. This scale is useful because equal distances on the scale represent an equal percentage change.
Linear Percentage	Use a *percentage scale* that displays the performance of a symbol relative to a starting point. The first loaded *Close* price of the symbol represents 0%. All later price developments are shown as percentages relative to this starting point. You can set a different starting point.

Note You can also change the type of the vertical scale in the **Chart Properties** dialog: Choose the name of the chart pane, and then **V.Scale > Type**. For example: **Pane 1 > V.Scale > Type**.

To set a starting point at a specific date / time for charts with a percentage scale

- Click on the **Set Vertical Scale Zero Point** icon in the **Drawing** toolbar:
- The mouse pointer changes:

- Click on the chart at the date / time that you want to use as the starting point for the relative performance of all inserted symbols. This date / time is now the common zero point for the relative performance of all symbols in this chart.

To set a starting point at a specific price for charts with a percentage scale

- Click on the **Set Vertical Scale Zero Point** icon in the **Drawing** toolbar. The mouse pointer changes.
- Click on the chart near the position where you want to set the starting point and hold the mouse button down.
- While holding the mouse button, use the following keyboard commands to set the starting point at a precise price:

O	*Open* price of this bar / column
H	*High* price of this bar / column
L	*Low* price of this bar / column
C	*Close* price of this bar / column

To set a starting point at any price level for charts with a percentage scale

- Click on the **Set Vertical Scale Zero Point** icon in the **Drawing** toolbar. The mouse pointer changes.

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- Press and hold the CTRL key.
- Click on the chart at the price level where you want to set the starting point.
- Release the CTRL key.

Inserting, Overlaying and Changing Symbols in a Chart

A chart can display more than one symbol. You can insert additional symbols into separate chart panes, or overlay them in the same chart pane. You can also change or replace the symbol that is displayed in a chart.

If you later want to remove one of the additionally inserted symbols, you can do so by removing them from the chart (see Removing Symbols on page 76), or temporarily hiding them (see Customizing Chart Objects on page 233).

To insert a symbol in an additional chart pane

- Right-click in the chart pane below which the symbol should be inserted and choose **Insert > Symbol**.
- In the **Symbol Search** dialog, enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol that you want to insert.
- Click **OK**. The symbol is inserted in a new pane below the selected chart pane.

Note If the chart pane that you have selected in the first step is empty (contains no symbols or other chart objects), then the new symbol is inserted into the active empty pane instead of into a new pane.

To overlay an additional symbol in the same chart pane

Note You can also create a chart with overlaying symbols by for example selecting several symbols in a price page and holding the CTRL key while opening them: See Opening Symbols from Existing Documents on page 66 for details.

- Right-click in the chart pane into which the additional symbol should be inserted and choose **Insert > Overlay**.
- In the **Symbol Search** dialog, enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol that you want to insert.
- Click **OK**. The symbol is inserted in the same chart pane, overlaying with the already displayed symbols. The overlaid symbols share the vertical price scale.

Note If the prices of the overlaying symbols differ too much from each other to be displayed reasonably on the same price scale, you can connect some of the overlaid symbols to the second price scale, which will be displayed on the left side of the chart. See Inserting a Second Price Scale on page 228.

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Note When the option **Activate study color inheritance on overlaid charts** is selected under **Tools** > **Options** > **Chart**, coloring for all symbols in a chart pane will change from Multi Color to Single Color mode as soon as a chart contains overlaid symbols. This means, that regardless of selected chart type: e.g. Candlestick, OHLC, Line etc. each data series will be displayed with only one color. See Chart Settings on page 340.

To change the symbol in a chart

There are several possibilities to change or replace the symbol that is displayed in a chart:

- Overwrite the symbol with a new symbol: Just start typing in the chart pane of the symbol. For details, see Calling Symbol Search from a Document on page 41.

Note If the chart pane contains more than one symbol, the first symbol will be replaced.

- Use the **Change Symbol** dialog, see Changing Symbols on page 73.
- Copy a symbol from another document with drag and drop to replace the current symbol. You have to drop the new symbol exactly on the existing symbol to replace it – the mouse pointer will lose the plus sign in this case. For details, see Copying Symbols on page 75.

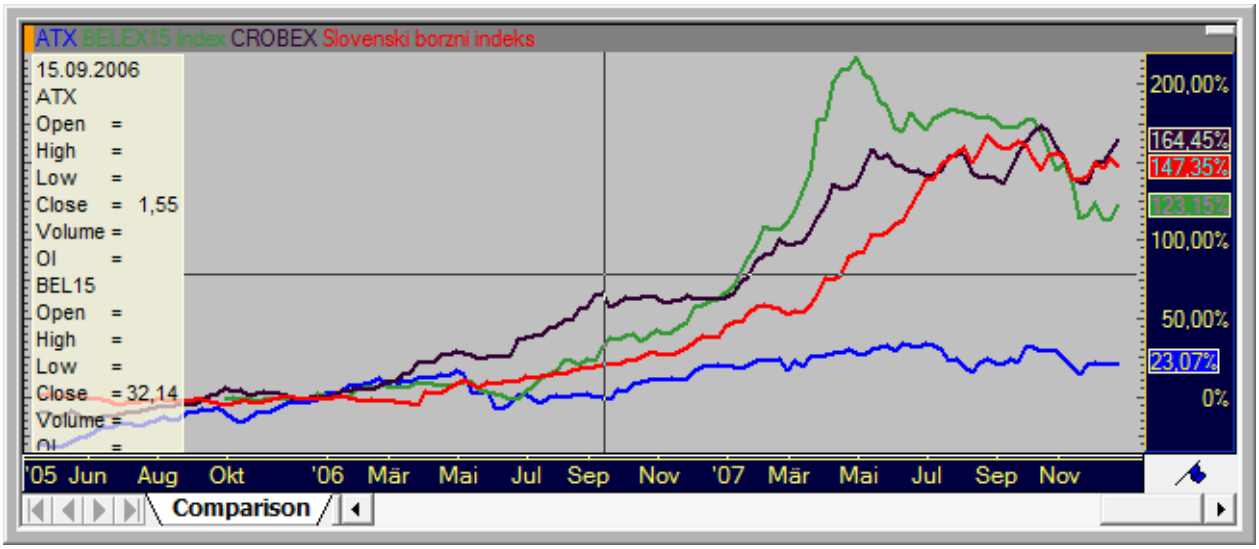
To copy a symbol to a chart from other documents

See Copying Symbols on page 75. You can of course also copy symbols between charts.

Note When you drop a symbol on a chart, it will be *overlaid* if you release the mouse button inside a chart pane, and *inserted* when you release the mouse button on a pane header. If you drop it exactly on an existing symbol, this symbol will be *replaced* by the new symbol.

Comparing the Performance of Overlaid Symbols

You can easily compare the performance of two or more symbols by using chart overlays and a percentage price scale.



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To compare several overlaid symbols with the percentage price scale

- Overlay several symbols in one chart pane with the command **Insert > Overlay**, for example some stocks and their index. See Inserting, Overlaying and Changing Symbols in a Chart on page 187 for details.
- Click on the arrow next to the **Chart Type** icon in the **Chart** toolbar and choose the scale type **Linear Percentage**:

- Now, set a common starting point for the relative performance of all overlaid symbols. Click on the **Set Vertical Scale Zero Point** icon in the **Drawing** toolbar:

- Click on the chart at the date / time that you want to use as the starting point for the relative performance of all inserted symbols. This date / time is now the common zero point for the comparison, which means that the relative performance of all overlaid symbols is calculated starting from this date / time.

Inserting a Chartable Expression

A chartable expression is a mathematical calculation that is plotted on the chart as a line, using one or more values from one or more symbols. You can use chartable expressions to convert the prices of a security to another currency, transform the prices to another value (for example, multiply them by a fixed value), or even create simple studies (like a *typical price* line).

Chartable expressions use symbols that are displayed on the current chart. Additionally, you can use existing studies and expressions when creating a new expression. Before you insert an expression, make sure that all symbols, studies and expressions that you want to use are present in the chart (it's ok if they are hidden, see Customizing Chart Objects on page 233). When you insert a chartable expression, you can choose operators and symbols from pop-up lists or add operators and numbers to your expression manually.

As there are many possible uses for expressions, we will introduce them with a simple example. For more details about the syntax of chartable expressions, see Syntax of Chartable Expressions on page 192.

To insert a chartable expression – an example

This chartable expression divides the Dow Jones Industrial Average index by the EURUSD exchange rate.

- Make sure that both the Dow Jones Industrial Average (DJIA) and EURUSD rate are inserted into the chart. See also Inserting, Overlaying and Changing Symbols in a Chart on page 187.
- In the chart pane where you want to insert the expression, type an equal sign **=** .
- In the list that appears, double-click your first symbol, the DJIA.

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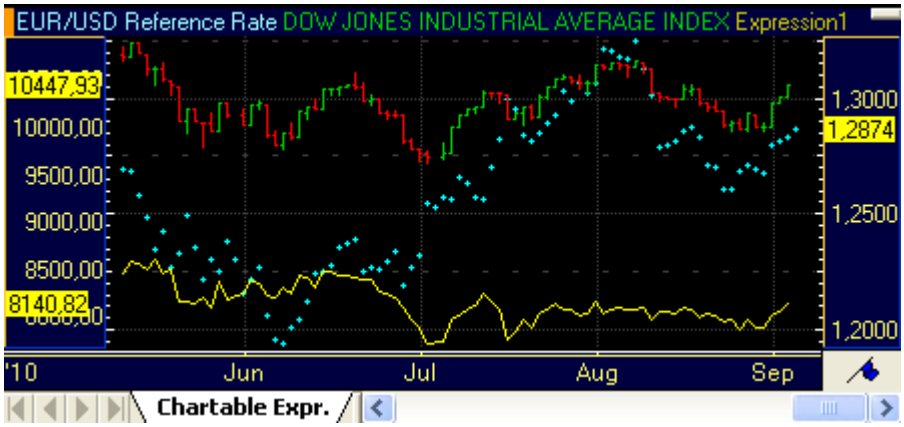
- In the field list, double-click the **CLOSE** field. You can scroll the list to reveal more fields and basic operators.

- Type the **/** operator.
- Double-click your second symbol in the symbol list, the EURUSD rate, and then double-click the **CLOSE** field in the field list.
- Press the ENTER key. The expression is now added to your chart (shown as a yellow line below). You can change the appearance of this line: See Changing the Appearance of Chartable Expressions on page 200 for details.



To insert a chartable expression based on a study – an example

This chartable expression shows the difference between the Dow Jones Industrial Average index close price and the Moving Average Simple study.

- Make sure that Dow Jones Industrial Average (DJIA) and Moving Average Simple study are inserted into the chart.
- In the chart pane where you want to insert the expression, type an equal sign **=** to start the chartable expression.
- In the list that appears, double-click the symbol name, Dow Jones Industrial Average (DJIA).

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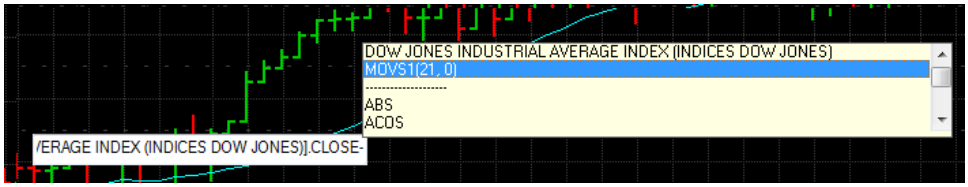
- In the field list, double-click the **CLOSE** field.

- Continue creating your expression by selecting the minus operator **–** and then double-click the **MOVS(21,0)** field.



- After you have finished writing the expression, press the ENTER key. The expression is now added to your chart (sown as a red line below).

Note Once you created the expression, you can use it as an input value for other chartable expressions.

To edit a chartable expression

- Right-click the chartable expression line and choose **Properties**.
- In the **Chart Properties** dialog, click the name of the expression.
- Edit the calculations in the field **Chartable Expression**. See also Syntax of Chartable Expressions on page 192.
- Click **Apply** or **OK** to save your changes.

To delete a chartable expression

- Right-click on the line of the expression and choose **Delete**.

Note If you remove one of the symbols that are used in the chartable expression from the chart, the expression is automatically removed, too.

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Syntax of Chartable Expressions

A chartable expression can consist of symbols, fields, operators, functions and numbers. The basic steps to insert an expression are always the same. For more information about the possibilities of chartable expressions, see the detailed syntax description below.

To insert a chartable expression – basic steps

- In the chart pane where you want to insert the expression, type an equal sign **=** to start the chartable expression.
- Do one of the following:
  - In the list that appears, double-click a symbol or a TeleTrader function.
  - Press the ESCAPE or BACKSPACE key to make the list disappear and type parts of the expression manually. While typing, appropriate functions are recommended automatically. For example, typing an S will show a list with all functions starting with S.
- Continue creating your expression using the syntax described below. Appropriate lists appear after using symbols, operators or functions.
- After you have finished writing the expression, press the ENTER key. The expression is now added to your chart.

Syntax of chartable expressions

Symbols	Symbols are always enclosed in square brackets. To use a symbol in an expression, type an opening square bracket `[` and choose the symbol from the list that appears by double-clicking it. The symbol list shows the symbols that are already visible in the chart. The closing square bracket is inserted automatically as soon as you choose the symbol. For example: `=[ADIDAS AG O.N. (XETRA)]` You can also manually add symbols that are not yet visible in the chart by typing an opening square bracket and then the symbol's name. Type a closing square bracket after the name, and the **Symbol Search** dialog appears. Choose the appropriate symbol and click **OK**. The new symbol is added as a hidden symbol (it is not visible in the chart), but can be used in the expression.

Fields	For every symbol, you can specify which field should be used for the calculation. A list with all available fields appears after you enter a symbol – choose the appropriate field by double-clicking it. The field is added to the symbol using the `.` (dot) operator (see below). If you do not specify a field, the `CLOSE` value is used by default.
	For example:
	`=[ADIDAS AG O.N. (XETRA)].VOLUME`
	
	Available fields are:
	`HIGH`
	`LOW`
	`OPEN`
	`CLOSE`
	`VOLUME`
	`OI` (Open Interest)

Operators	Operators connect symbols with each other or with a constant number. In addition to the standard mathematical operators, the dot operator is used to specify the field for a symbol. You can enter operators from the keyboard manually, or choose them from the operator list when it appears. The operator list always appears directly after you enter a symbol. `.` Dot operator: Use it directly after a symbol to specify a field value to use for this symbol.

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	`+`	Addition
	`-`	Subtraction
	`/`	Division
	`*`	Multiplication
	`^`	Power
	`()`	Round brackets for changing operator precedence of mathematical operators
	Standard operator precedence is the same as for all mathematical calculations: Brackets – Power – Multiplication and Division – Addition and Subtraction.	
TeleTrader Functions	You can use some functions of the TeleTrader Language inside chartable expressions. The list of available functions is automatically shown at the start of an expression and after entering a mathematical operator. You can also type the function manually - while typing, appropriate functions are recommended automatically. For example, typing an S will show a list with all functions starting with S. After choosing a function, an opening bracket is inserted and the list of symbols is shown. You have to close the function brackets manually. For example: `=MIN([ADIDAS AG O.N. (XETRA)].OPEN,[ ADIDAS AG O.N. (XETRA)].CLOSE)` For more information about the available functions, see the Function Reference on page 501.	

Numbers	In addition to symbols, you can also use constant numbers in an expression. To use a number, you have to type it on your keyboard manually. For example, you could multiply the volume of a symbol by two using the following syntax:
	`=[ADIDAS AG O.N. (XETRA)].VOLUME*2`
	You can also create horizontal lines at a certain price level by typing the appropriate number:
	`=9500`	

More examples

`=[GOOGLE INC. (NASDAQ)]*3`	Multiply the *Close* price of the Google stock by three. Note that no field was specified – therefore, the expression automatically uses the `CLOSE` field.
`=[DAX P-IN. (INDICES XETRA)].CLOSE* [EUR/USD SPOT (FOREX GTIS BASIC FX SNAPSHOT)].CLOSE`	Multiply the *Close* price of the DAX symbol with the EURUSD rate.
`=([DOW JONES INDUSTRIAL AVERAGE INDEX (INDICES DOW JONES)].HIGH+[DOW JONES INDUSTRIAL AVERAGE INDEX (INDICES DOW JONES)].LOW+[DOW JONES INDUSTRIAL AVERAGE INDEX (INDICES DOW JONES)].CLOSE)/3`	Add the *High*, *Low* and *Close* for the DJIA and divide it by three. (This calculation is also called the *typical price*, used for example in the Commodity Channel Index.) Note that you can use the same symbol with different field values in one expression. For this rather complex expression, you have to manually enter round brackets to force the correct operator precedence.

Besides using the on-the-fly assistant for inserting expressions, you can also insert an expression by manual typing over the chart area. Typing over the chart area works only if the on-the-fly assistant is disabled. You can enable / disable the on-the-fly assistant by using the option **Turn off automatic display of assistant for chartable expressions** under **Tools** > **Options** > **Chart** > **Expressions**.

Note **Turn off automatic display of assistant for chartable expressions** is activated by default.

By inserting a chartable expression by manual input, it is possible to:

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- Insert a simple chartable expression (one symbol wih simple numeric operations)
- Insert a chartable expression with analysis tools (indicator or study)
- Insert a complex chartable expression (using multiple studies with several entities / properties with multiple numeric operations and with complex tickers)

Chartable expressions entered by manual typing - important characteristics

- To insert a chartable expression, enter "=" (equal) sign. This sign is also used to delete a previously typed expression.
- To add an additional expression, without deleting the first one, enter "," (comma) sign, and continue typing an expression.
- To delete existing chartable expression, enter "-" (hyphen) sign, and continue typing an expression.
- It is possible to add a new and delete existing chartable expression in a single command.
- If a symbol referenced in an expression doesn't exist on a chart, it will be automatically added (and hidden) after the expression is added by pressing the ENTER key or TAB key. When the symbol is hidden, its name is not visible in the chart header.
- If a symbol ticker (unique symbol name) contains the special character "-", it can be wrongly interpreted as the mathematical minus operator. Such names must be enclosed with square brackets when entered in an expression. For instance: Symbol ticker IEC-W1-2, must be entered in expression as **[IEC-W1]-2**.
- If the type of a price (e.g. Open, High, Low or Close) is not defined when the symbol was entered in an expression, Close price will be automatically used for all symbols referenced in the expression.
- If a symbol referenced in an expression cannot be found (i.e. unique name / ticker is not correct), an error message appears.

Insert simple chartable expression by manual typing

To insert simple chartable expression – an example

- Open chart document for PTT symbol
- Type =(BBL+SCB+KBANK)/3 and press ENTER key

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- Expression (BBL+SCB+KBANK)/3 is added to chart and replace PTT symbol, while symbols BBL, SCB and KBANK are hidden

To insert two simple ratios as chartable expressions – an example

- Open chart document for BBL symbol
- Type =BBL/SET and press ENTER key

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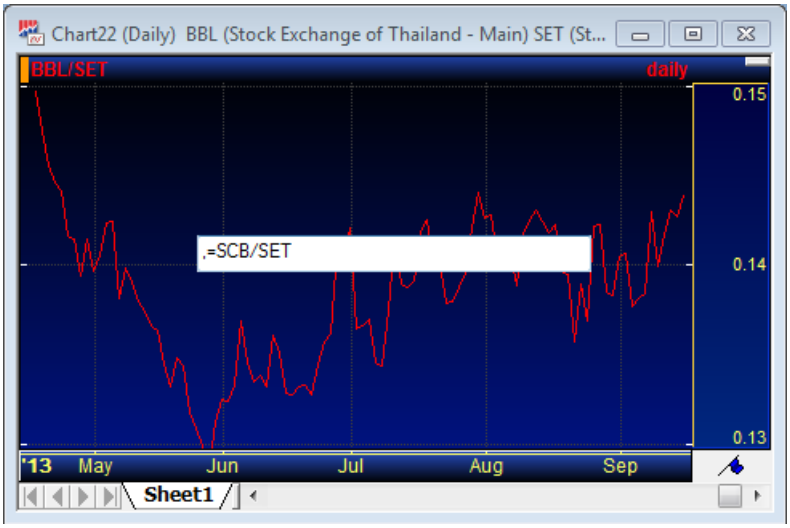
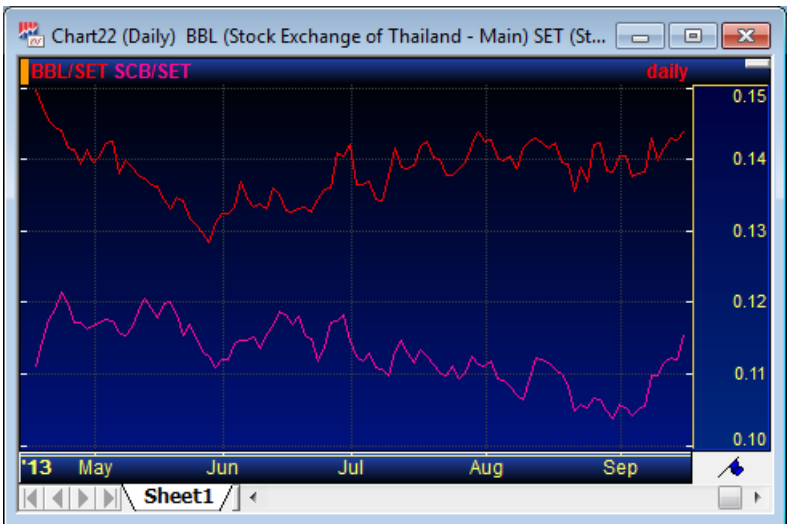
- Type ,=SCB/SET and press ENTER key



- Both expressions are added to chart



Warning If you do not enter "," (comma) character before typing second expression, previous expression will be deleted!

Insert chartable expression with analysis tools by manual typing

Besides using symbols values like Open, High, Low, Close and Volume, you can also use analysis tools (indicators and studies). As with any manual typing of expressions, this is possible only if On-The-Fly assistant is turned off.

You can insert expression which includes indicator regardless if that indicator is visible or not visible on a chart. Indicator inserted in expression will be automatically added to chart as hidden object and use compression of the main chart.

See the syntax for manual typing of expression that include analysis tools (indicators and studies) in the table below:

Function_at(BaseSymbol1UniqueName.FidName,…,BaseSymbolXUniqueName.FidName,Parameter1Value,…, ParameterXValue).EntityName.PropertyName

Parameter	Description
Function_at	Analysis tool function name (can be found in Study Info / Function field), with

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	fixed suffix "_at"
BaseSymbolXUniqueName	Unique name(s) of base symbol(s) for the analysis tool
FidName	Open, High, Low or Close. If there is no fid name, Close value is used.
ParameterXValue	Optional value for analysis tool parameters. Parameters should be given in the order as in Parameters dialog. If trailing parameter(s) are omitted, their default value(s) are used
EntityName/PropertyName	Entity and property name for analysis tool with several entities, e.g. Bollinger Bands: ▪ Has two entities: Boll(Area) and Mid(Line). ▪ Each area has two properties: Upper and Lower. ▪ Each line has one property: Value. ▪ Each marker has three properties: Price, Direction and Text.

To insert chartable expression with Moving Average Simple study – an example

- Open chart document for any symbol
- Type =movs_at(SCB,30,2) and press ENTER key
- Moving Average Simple study will be plotted on a chart for SCB symbol, with 30 bar period and 2 bar shift

In the table below, you can see examples for different types of expression formats and studies:

Expression format	Action taken
movs_at(SCB)	Inserts Moving Average Simple for SCB with period=21, shift=0
movs_at(SCB,30)	Unique name(s) of base symbol(s) for the TA
movs_at(SCB,30,2)	Inserts Moving Average Simple for SCB with period=30, shift=2
indCorrelation_at(SCB,PTT,21)	Inserts Correlation for SCB and PTTwith period=21, shift=0
boll_at/(SCB.HIGH,30).Boll.Upper	Inserts Bollinger band TA with SCB base symbol, HIGH fid, period=30, over Upper value of Boll area of the TA.

Insert chartable expression with analysis tools on overlaid symbols by manual typing

- When inserting a study on a chart with overlaid symbols, study will be added for each of available symbols on a chart. If there is only one symbol with a study on a chart, adding an overlay symbol will automatically add an additional study based on newly added symbol.
- If multiple symbols are displayed on a chart, and each of them has a different study, inserting a new overlay symbol will automatically add a study like the one applied to the chart main symbol.
- If multiple symbols are displayed on a chart, and each of them has a different study, inserting two or more overlay symbols will automatically add same number of studies like the one applied to the chart main symbol.

To insert chartable expression with Moving Average Simple study on overlaid symbols

- Open chart document with three overlaid symbols: BBL, SCB and KBANK.
- Type =movs_at() and press ENTER key.
- Moving Average Simple study will be plotted on a chart for all three symbols: BBL, SCB and KBANK, with 30 bar period and 2 bar shift.

In the table below, you can see examples for different types of expression formats and studies:

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Chart setup	Expression format	Action taken
Overlay chart with: BBL, SCB and KBANK	,=MOVS_AT()	Inserts Moving Average Simple study for BBL, SCB and KBANK with period=21, shift=0
Overlay chart with: BBL, SCB and KBANK	,=MOVS_AT(,12)	Inserts Moving Average Simple study for BBL, SCB and KBANK with period=12, shift=0
Overlay chart with: BBL, SCB and KBANK	,=MACD_AT(12,15,5)	Inserts MACD study for BBL, SCB and KBANK with parameters 12, 15, 5

Insert complex chartable expression by manual typing

Besides using simple analysis tools (indicators and studies) with only one entity / property, you can insert expression based on analysis tools that have two or more entities and properties. As with any manual typing of expressions, this is possible only if On-The-Fly assistant is turned off.

You can insert expression which include indicator regardless if that indicator is visible or not visible on a chart. Indicator inserted in expression will be automatically added to chart as hidden object and use compression of the main chart.

To insert chartable expression with multiple entities / properties – an example

- Open chart document for any symbol
- Type =move_at(BBL,25)/move_at(SCB,25) and press ENTER key
- Ratio of two moving averages based on BBL and SCB symbols will be plotted on a chart

To insert complex chartable expression – an example

- Open chart document for any symbol
- Type =(SCB.CLOSE+BBL.CLOSE)/(move_at(BBL,25)/move_at(SCB,25)) and press ENTER key
- Expression is plotted on a chart based on calculation calculation from expression: (SCB close price + BBL close price) / (moving average simple with period=25 based on BBL symbol / moving average simple with period=25 based on SCB symbol).

Insert studies by manual typing

Besides inserting expressions based on a study, you can also insert studies by manual typing. This is the same action, as if you right-click on a chart area and select **Insert Study** from a contex menu.

To insert study by manual typing – an example

- Open chart document for PTT symbol
- Type MOVS() or MOVS(PTT) and press ENTER key
- Moving Average Symple study for PTT symbol is plotted on a chart

See the syntax for manual typing of analysis tools (indicators and studies) in the table below:

Chart setup	Expression format	Action taken
Overlay chart with: BBL, SCB and KBANK	**,MOVS()**	Inserts Moving Average Simple study for BBL, SCB and KBANK with period=21, shift=0
Overlay chart with: BBL, SCB and	**,MOVS(BBL)**	Inserts Moving Average Simple study for BBL only, with period=12, shift=0

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KBANK		
Overlay chart with: BBL, SCB and KBANK	**,MOVS(BBL,10)**	Inserts Moving Average Simple study for BBL only, with period=10, shift=0
Overlay chart with: BBL, SCB and KBANK with SMA study calculated on all three symbols	**,RSI()**	SMA and RSI studies based on BBL, SCB and KBANK symbols are displayed on a chart.

Note There are several limitations regarding chartable expression with analysis tools on overlaid symbols: Multi-base studies (e.g. **Correlation**) and market breath studies (e.g. **Coppock Breadth**) are not currently supported.
Also, inserting the same study on multiple curves (symbols, expressions etc.) is only available by typing a chartable expression, but not trough **Insert Study** dialog from a Chart context menu.

Replace existing chartable expression by manual typing

To replace existing chartable expression – an example

- Open chart document with three overlaid symbols: PTT, PTTEP and TOP
- Add additional symbol by typing **BBL,SCB** and press ENTER key
- BBL and SCB symbols replace PTT, PTTEP and TOP symbols on the chart.

Expression type	Initial Setup	Deletion Typing Command	Outcome
Symbols	PTT, PTTEP, TOP	BBL,SCB	BBL and SCB
	BBL,SCB	PTTEP	PTTEP
	PTTEP	SET,BBL,PTT	SET, BBL and PTT
Ratios	PTT/SET and TOP/SET	=BBL/SET,=KBANK/SET	BBL/SET and KBANK/SET
Studies	First create a study called MyIndex BBL/MYINDEX and SCB/MYINDEX	=KBANK/MYINDEX_AT(SYMBOL), =BAY/MYINDEX_AT(SYMBOL)	KBANK/MYINDEX and BAY/MYINDEX
Mix of symbols, expressions and studies	ADVANC, SHIN and INTUCH	=CPN/PROP,=CK/PROP,PROP,SET	CPN/PROP, CK/PROP, PROP and SET

Add additonal chartable expression by manual typing

To add additional chartable expression – an example

- Open chart document with three overlaid symbols: BBL, PTT and SCB
- Add additional symbol by typing **,CPF,CPN** and press ENTER key
- CPF and CPN symbols are added on a chart along with three other symbols: BBL, PTT and SCB.

Expression type	Initial Setup	Deletion Typing Command	Outcome
Symbols	PTT, PTTEP, CPN	,CPF,BBL	PTT, PTTEP, CPN,

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			CPF and BBL
Ratios	BBL/SET and CPF/SET	,=PTT/SET,=PTTEP/SET	BBL/SET CPF/SET PTT/SET PTTEP/SET
Studies	First create a study called MyIndex BBL/MYINDEX and SCB/MYINDEX	,=KBANK/MYINDEX_AT(SYMBOL) ,=BAY/MYINDEX_AT(SYMBOL)	BBL/MYINDEX, SCB/MYINDEX, KBANK/MYINDEX, BAY/MYINDEX
Mix of symbols, expressions and studies	BBL/SET, CPF/SET	,=PTT/SET,CPN	BBL/SET, CPF/SET, PTT/SET and CPN

Delete existing chartable expression by manual typing

To delete existing chartable expression – an example

- Open chart document with three overlaid symbols: BBL, PTT and SCB.
- Delete two symbols by typing **,-BBL,-PTT** and press ENTER key.
- Only SCB symbol remains on a chart.

Expression type	Initial Setup	Deletion Typing Command	Outcome
Symbols	PTT PTTEP TOP	,-TOP,-PTTEP	PTT
Ratios	PTTEP/PTT TOP/PTT PTT/SET KTB/SET	,-=TOP/PTT,-=PTT/SET	PTTEP/PTT and KTB/SET
Studies	First create a study called MyIndex BBL/MYINDEX	,-=BANK/ MYINDEX_AT(SYMBOL),-=BAY/ MYINDEX_AT(SYMBOL)	BBL/MYINDEX and SCB/MYINDEX
Mix of symbols, expressions and studies	PTTEP/PTT KTB/PTT PTTEP KTB,SET	,-=PTTEP/PTT,-SET	KTB/PTT and KTB

Warning Symbols that are used for calculating the expressions (such as ratios), are set to hidden mode. If you execute deletion command which contains a symbol that is used for calculating an expression, this expression will also be removed, because its base symbol does not exist anymore.
For example, if you have PTT/SET,BBL expression displayed on a chart, and execute deletion command **,-=SET** only BBL symbol will remain on the chart.

Simultaneous adding and deleting a chartable expression by manual typing

To add and delete a chartable expression – an example

- Open chart document with three overlaid symbols: BLA, PTT and SCB.
- Enter chartable expression command **,-BLA,BBL** and press ENTER key.
- BLA is removed from a chart while BBL is added on a chart along with two existing symbols: PTT and SCB.

Changing the Appearance of Chartable Expressions

A chartable expression is displayed on the chart as a single line. You can change its display type, width, style and color.

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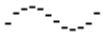
To change the appearance of a chartable expression

- Right-click on the chartable expression line and select **Properties**.
- On the left side of the **Chart Properties** dialog, select **Studies**, the name of the Expression and then **Appearance**. For example: **Studies > Expression1 > Appearance**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Pane	Chart pane that the chartable expression is displayed in
Display Type	Display type of the line: **Line** **Histogram**  **Points** **Steps**
Weight	Width of the line
Style	Style of the line
Color	Color of the line and of the expression name
Automatically use alternate color for subsequent inserts of the same study	Check to automatically use a new line color if this expression is later inserted again into the same chart pane. Uncheck to use the default line color every time this expression is inserted into the same chart pane.

Using Keyword Commands in Charts

Keyword commands are typed commands that are entered in the same way as chartable expressions (by just typing the command into the active chart document). They are used for easier manipulation of charts, for example to change the chart type, compression and time region. Each keyword command can be entered either as a full keyword, or by typing the appropriate keyword abbreviations. For example: To reset the chart to default settings, you can type **.RESET** or **.RE** and press the ENTER key.

> **Note** When entering keyword commands, you have to enter the minimum number of characters required for that specific command to be executed. For example, in order to execute the **RESET** command, you can type any number of characters from the minimum up to the whole command: **.RE**, **.RES**, **.RESE** or **.RESET**.

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Keyword commands in charts – important characteristics

- Keyword commands are not case sensitive. This means that keyword commands can be typed as **.RESET** or **.reset.**
- All keyword commands must start with a point. Typing just **RESET** without the point instead of **.RESET** will trigger a smart symbol search instead of resetting the chart.

To enter the RESET keyword command on a chart – an example

- Make sure that at least one chart document is open.
- In the chart, just type the keyword abbreviation, for example **.RE**.

- Press the ENTER key. The command is executed and the chart resets to its default settings.

List of keyword commands

Keyword command	Minimal command abbreviation	Action taken
.RESET	**.RE**	Resets chart to its default settings.
.QQ	**.QQ**	Opens the **Quick Quote** document for the main symbol on the chart using default template. If there are multiple panes in a chart, Quick Quote document opens for the main symbol of the pane in which the typing was performed.
.T&S	**.TS**	Opens the **Time and Sales** document for the main symbol on the chart. If there are multiple panes in a chart, Time and Sales document opens for the main symbol of the pane in which the typing was performed.
.NEWS	**.NE**	Opens the News document using default template.
.CANDLE	**.CA**	Changes the chart type to **Candlestick**
.BAR	**.BA**	Changes the chart type to **Bar**
.LINE	**.LI**	Changes the chart type to **Line**
.POINT	**.PO**	Changes the chart type to **Point**
P&F	**.PF**	Changes the chart type to **Point and Figure**
.HISTOGRAM	**.HI**	Changes the chart type to **Histogram**
.STAIR	**.ST**	Changes the chart type to **Stair Step**
.3LB	**.3L**	Changes the chart type to **Three Line Break**

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.RENKO	**.REN**	Changes the chart type to **Renko**
.KAGI	**.KA**	Changes the chart type to **Kagi**
.HEIKIN	**.HEI**	Changes the chart type to **Heikin Ashi**
.LOG	**.LO**	Changes the vertical scale to **Logarithm Price** mode
.LINEAR	**.LIN**	Changes the vertical scale to **Linear Price** mode
.PERCENT	**.PE**	Changes the vertical scale to **Linear Percentage mode**

Changing chart compression by manual typing

Typing command	Action taken
.0	Change compression to **Tick by Tick**
.1	Change compression to **1 Minute**
.2	Change compression to **2 Minute** Allowed intraday compressions are **1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30** and **60 Minutes**
.3T	Change compression to **3 Ticks**
.5T	Change compression to **5 Ticks** Allowed tickbar compressions are **3, 5, 10, 15, 20, 30, 50** and **100 ticks per bar**
.2H	Change compression to **2 Hours**
.3H	Change compression to **3 Hours** Allowed hourly compressions are **2, 3, 4, 6, 8,** and **12 hours per bar**
.D	Change compression to **Daily**
.W	Change compression to **Weekly**
.M	Change compression to **Monthly**

Defining chart time region by manual typing

Typing command	Action taken
.ALL	Chart download all available data history for symbol(s) on a chart. It is the same action as if you select **All** radio button under **Chart Properties** > **Time region** sheet.
.LAST 5M	Chart download the last **5 Minutes** of intraday or tick data.
.LAST 5H	Chart download the last **5 Hours** of intraday or tick data.
.LAST 5D	Chart download the last **5 Days** of daily, intraday or tick data.
.LAST 5W	Chart download the last **5 Weeks** of weekly, daily, intraday or tick data.
.LAST 5MON	Chart download the last **5 Months** of monthly, weekly, daily, intraday or tick data. These are the same action as if you select **Last** radio button and define time region under **Chart Properties** > **Time region** sheet. **Note:** Command will be executed only if chart compression matches the time period defined by command. For instance: In order to execute **.LAST 5D** command, chart compression must be daily, intraday or tick data.
.RECORDS 123 or .RECORD 123	Chart download the last **123 records** of data in the current chart compression. It is the same action as if you select Records radio button and enter 123 under **Chart Properties** > **Time region** sheet.

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.FROM 8/8/11 TO 8/8/12	Chart download all the records in the current chart compression from Aug 8th 2011 till Aug 8th 2012. Supported formats are: MM,DD,YYYY, MM/DD/YY or M/D/YY. It is the same action as if you select **Period (from-to)** radio button and define starting and ending dates under **Chart Properties** > **Time region** sheet.
.BEFORE 8/8/11	Chart download all the available records in the current chart compression before Aug 8th 2011. The bar for Aug 8th 2011 is the first bar displayed on the far right of the chart. It is the same action as if you select **Period (from-to)** radio button and define ending date under **Chart Properties** > **Time region** sheet.
.AFTER 8/8/11	Chart download all the available records in the current chart compression after Aug 8th 2011. The bar for Aug 8th 2011 is the first bar displayed on the far left of the chart. It is the same action as if you select **Period (from-to)** radio button and define starting date under **Chart Properties** > **Time region** sheet.

Navigating and Organizing a Chart

As most charts with some historical data cannot be reasonably displayed in detail as a whole on the computer screen, the most current data is shown by default. You can scroll to display older data with the scrollbar at the bottom of the chart window.

If you want to see *more details for a specific section* of a chart, you can zoom into a section of a chart, based on a certain date / time range, a number of bars or manual selection. You can also scale the time series to the screen, so that you can see a wider or narrower price range (vertical scaling), or expand / compress the time scale (horizontal scaling).

To quickly *jump to certain points* in a bigger chart, you can define bookmarks at certain points in time and use them for chart navigation. To quickly jump to the beginning or end of a chart, click the Data View button and choose the option **Chart beginning** or **Chart end**. The Data View button is located in the lower right corner of every chart and offers several useful options to zoom and navigate a chart.

If you have *many symbols and/or other chart objects*, like drawing objects or studies, that should be displayed in one chart document, you can organize them into several panes. A chart pane is a section of a chart that holds symbols, studies and other objects. Every chart consists of at least one chart pane. You can also define several sheets in a chart to organize its content. Chart sheets can also be used in combination with the chart window split to for example display several data compressions in one chart at once.

Zooming a Section of a Chart

You can enlarge a section of the chart to see more details of the time series and other chart objects. When you zoom into a chart, you can either manually choose the section that should be enlarged with the **Zoom In** tool, or choose a specific date / time range or number of bars that should be enlarged with the **Data View** button. You can of course also zoom out of the chart again or reset the chart to its default settings.

For other ways to expand, compress or vertically scale the time series, see also Scaling the Time Series to the Screen on page 206.

To zoom into a section of a chart

- Click on the **Zoom In** icon on the **Chart** toolbar:
- The mouse pointer changes:

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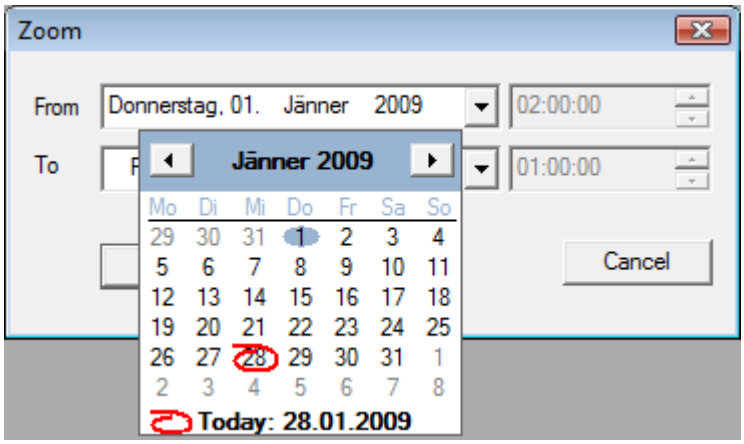
- Click on the chart at the starting point of the section that you want to magnify, and hold the mouse button down.
- Move the mouse pointer to the end point of the section and release the mouse button.

Note

The **Zoom In** tool will stay active as long as you do not use another tool. To deactivate it, click on the **Zoom In** icon again, or press the Esc key on your keyboard.
Instead of using the **Zoom In** tool, you can also click on the time scale of a chart to zoom into it.

To zoom into a date (time) range of a chart

- Click the **Data View** button and choose **Zoom**.
- In the **Zoom** dialog, select the start and end dates (or times) of the section that you want to magnify.
- To choose a date from the calendar, click on the arrow next to the dates in the **From** and **To** fields, or type the date into the fields.



- To choose a time, click on the element of the time field that you want to change (hours, minutes or seconds). Then, change it with the arrows on the right, or type the new time into the field.
- Click **OK** to magnify the date / time range that you have specified.

Note

The time field is only available in intraday charts. If you choose a combination of start dates and end dates (or times) that is not valid (for example because the end date is before the start date), the specified section will not be magnified.

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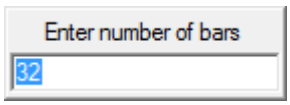
To zoom into a section with a fixed number of bars (candles, columns etc.)

- Click the **Data View** button and choose **Number of bars**.
- A text field is shown. Enter the number of bars (or candles, Point and Figure columns etc.) that you want to see on your screen.



- Press the ENTER key. A section with the specified number of bars is magnified.

To zoom out of a chart

- Click on the **Zoom Out** icon on the **Chart** toolbar:
- The chart will be scaled down by one step. You can zoom out as often as you have zoomed into a chart.

> **Note** This tool can only be used when you have magnified (zoomed into) a section of the chart first. Instead of using the **Zoom Out** tool, you can also hold the CTRL key and click on the time scale of the chart.

To reset the chart to its defaults (zooming, scaling and margins)

- Click the **Data View** button and choose **Chart reset**.

Scaling the Time Series to the Screen

In addition to zooming (see Zooming a Section of a Chart on page 204), you can also adjust the vertical and horizontal scaling of a chart.

Vertical scaling

You can set the *vertical scaling* to dynamically adapt to the section of the time series that is shown on the screen, or to relate to the fixed maximum and minimum points of the loaded historic data. You can also move the time series freely on the screen by dragging it up or down.

To vertically scale the time series to the screen

- Click on the **Adjust Screen Mode** icon on the **Chart** toolbar to toggle between the two following settings:

Scale visible time series	Only the part of the time series that is visible on the screen is taken into account for vertical scaling. When you scroll the chart to the left or right with the scrollbar, the scaling is adjusted dynamically so that the maximum of the visible time series is always at the top of the chart, and the minimum of the visible time series is at the bottom of the chart. This is the default setting.
Scale entire time series	The entire loaded time series is taken into account for vertical scaling, including historic data that might not be visible at the moment. When you scroll the chart to the left or right with the scrollbar, the scaling does not change, as the size of the vertical scale has been determined already by using the maximum and minimum of the entire time series. This setting might lead to blank spaces at the top or bottom of the visible part of the chart, especially when you load a lot of historic data to your chart.

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Note For more information about the vertical scaling of a chart, see Changing the Scaling of the Price Scale on page 229.

To move the time series on the screen with drag and drop

- Click on the **Free Hand** icon on the **Drawing** toolbar:
- The mouse pointer changes:

- Click on the chart, hold the mouse button down and drag the chart into any direction. The time series is positioned on the screen accordingly.

Note The **Free Hand** tool will stay active as long as you do not use another tool. To deactivate it, click on another tool icon, or press the ESC key on your keyboard. When you save a chart while the **Free Hand** tool is active, this setting will be saved as well.

Horizontal scaling

You can adjust the *horizontal scaling* by expanding or compressing the time series (similar to zooming), or by adjusting the scale so that all available data is shown on the screen at once.

To expand the time series (show less data points on the screen)

- Click on the **Expand** icon on the **Chart** toolbar:

Note You can also press the – MINUS key or DEL key (when no chart object is selected).
This function is similar to the **Zoom In** tool. See Zooming a Section of a Chart on page 204.

To compress the time series (show more data points on the screen)

- Click on the **Compress** icon on the **Chart** toolbar:

Note You can also press the + PLUS key or INS key.
This function is similar to the **Zoom Out** tool. See Zooming a Section of a Chart on page 204.

To show the entire data series on the screen

- Click on the **Show All Data** icon on the **Chart** toolbar:

Note You can also click the **Data View** button and choose **Show all data** instead.

Chart reset

When you have zoomed into the chart, set custom scaling options or pane margins, you can always return the chart to its default state. Other settings (chart type, data compression, colors etc.) will not be affected by this.

To reset the chart to its defaults (zooming, scaling and margins)

- Click the **Data View** button and choose **Chart reset**.

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Note You can also press the HOME key to reset the chart.

Setting, Moving and Editing Bookmarks

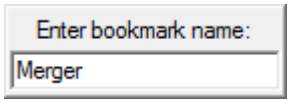
You can place bookmarks on a chart at certain points in time. The bookmark is shown on the time scale with an icon, and on the chart with a vertical line. Each bookmark can have a name and a description. You can later also change the position of a bookmark with drag and drop.

You can use the bookmarks for chart navigation: With the **Data View** button, you can jump to a specific bookmark, browse through bookmarks or go to the first and last bookmark of the chart.

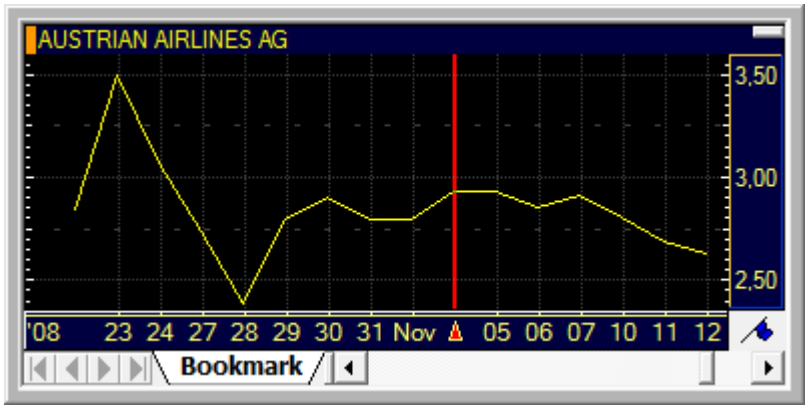
To set a bookmark

- Right-click anywhere on the chart and choose **Bookmark > Insert bookmark**.
- The mouse pointer changes:

- Click on the chart at the date / time where you want to set the bookmark.
- A text field is shown. Enter the name of the bookmark.



- Press the ENTER key. The bookmark is added to your chart.



To move a bookmark

- Click on the bookmark's icon on the time scale and drag the bookmark to the left or right.

- Drop the bookmark's icon at the new date / time on the time scale.

To navigate to a bookmark

- Click on the **Data View** button and select a bookmark navigation option:

Goto first	Jumps to the first (leftmost) bookmark on the chart.
Goto previous	Jumps to the previous bookmark, to the left of your current chart position.
Goto next	Jumps to the next bookmark, to the right your current chart position.

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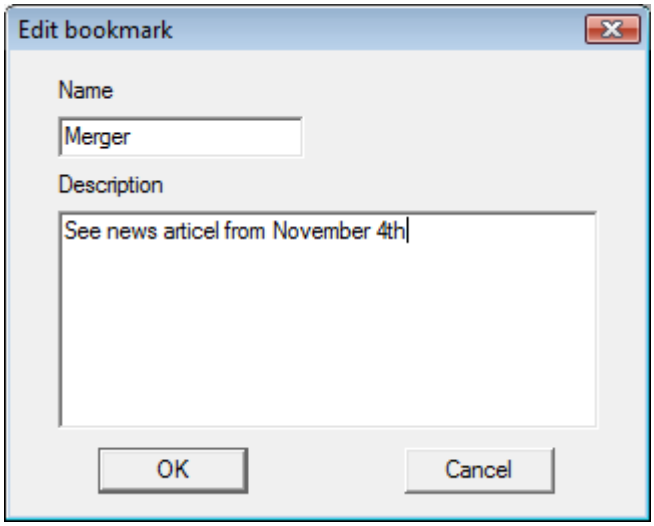
Goto last	Jumps to the last (rightmost) bookmark on the chart.
Goto Bookmark	Lets you choose a specific bookmark to navigate to.

To edit the name of a bookmark and enter a description

- Right-click the bookmark's icon on the time scale and choose **Bookmark > Edit bookmark**.

> **Note** You can also use the menu command **Format > Bookmarks**. Then, you can edit several bookmarks at once. Choose the bookmark you want to edit from the list.

- In the **Edit bookmark** dialog, edit the name of the bookmark in the **Name** field, or add a **Description**.



- Click **OK** to save your changes.

To change the color of bookmarks

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select **General > Misc**.
- On the right side of the dialog, choose a **Bookmark color** for all bookmarks of the chart.

To delete a bookmark

- Right-click the bookmark's icon on the time scale and choose **Bookmark > Delete bookmark**.

> **Note** You can also click on the **Data View** button and choose **Remove Bookmark**.

To delete all bookmarks

- Click on the **Data View** button and choose **Remove all Bookmarks**.

Creating and Organizing Chart Panes

Each chart consists of at least one chart pane. A chart pane is a section of a chart that can hold symbols, studies and other chart objects. Many chart settings apply to a specific chart pane, like the background color, the vertical price scales and the header, but all chart panes share the same horizontal time scale.

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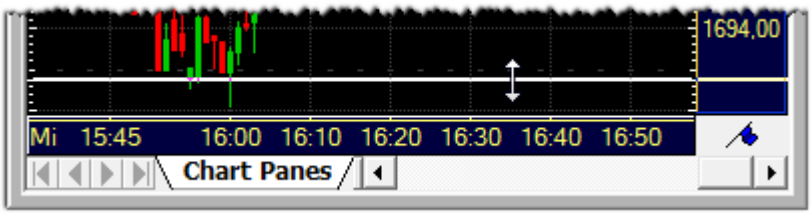
You can use chart panes to display many symbols in one chart without overlaying them (Inserting, Overlaying and Changing Symbols in a Chart on page 187) or to display certain studies in a separate section of the chart, especially when they use another scale than the symbol they are based on (for example most oscillators).

When you create new chart panes, every pane is automatically assigned an ascending number. The chart pane displayed at the top of a chart is always called **Pane 1**.

To create a new empty chart pane

- Place the mouse pointer on the line above the horizontal time scale. The mouse pointer changes.



- Hold the mouse button down and drag the line upwards. A new empty chart pane appears.
- Release the mouse button when the size of the new pane is big enough.

To create a new chart pane containing a symbol / a study

- When you *insert a symbol* into a chart, it is automatically added in an additional chart pane. You can use the command **Insert > Symbol**, or drag and drop a symbol from another document. See Inserting, Overlaying and Changing Symbols in a Chart on page 187 for details.
- When you *insert a study* into a chart, you can choose in which pane it will appear. If you choose **Top** or **Bottom**, the study is added in an a new chart pane at the top / bottom of the chart. See Defining the Appearance of a Study on page 305 for details.

Note If you want to insert the same studies in one pane, instead of multiple panes, select **Insert the same studies in the same pane** option under **Tools** > **Options** > **Chart**, For example, if you insert MACD study (using different parameters) on a chart two times in a row, MACD studies will be displayed in one pane instead of two. See Chart Settings on page 340.

To resize a chart pane

- Place the mouse pointer on the separation line between two chart panes. The mouse pointer changes.
- Hold the mouse button down and move the mouse up or down to resize the pane.

To set the height of all chart panes equally

- Click the **Data View** button and choose **Equalize Panes Height**.

To change the top and bottom margins of a chart pane

- In the **Chart Properties** dialog, click the name of the chart pane, for example **Pane 1**.
- Under **Pane margins (in pixels)**, enter the size of the **Top** and **Bottom** margins. The maximum size is 100 pixels. See also Changing the Background Color of a Pane on page 225.

Note If you want to increase the right margin of the chart pane, i.e. add space between the last bar and the price scale, see Extending the Time Line to the Future on page 224.

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To close the active chart pane

- Right-click the chart pane that you want to close and choose **Close Pane**.

To close all chart panes except the active pane

- Right-click the chart pane that you want to keep and choose **Close All Panes Except**.

> **Note** A chart consists of at least one chart pane. Therefore, one pane must remain open.

Using Sheets in Charts

Like a price page, a chart consists of at least one sheet. You can add additional sheets to a chart to organize the contents of a chart. Each sheet can be customized independently – that means it can use different data compressions, chart types, panes, studies etc.

Sheets are especially useful in a chart when you use a split chart window, as outlined below in an example. That way, you can display one symbol in a chart with different data compressions, chart types or studies.

For more information about how to create new sheets, rename or remove a sheet, see the information about sheets in price pages: Adding and Organizing Sheets on page 87.

> **Note** You cannot move symbols from one chart sheet to another like you can in price pages. However, whenever you create a new sheet in a chart, all symbols and studies of the first sheet are automatically copied to the new sheet. The new sheet will also use the time region set for the first sheet, except when the first sheet is set to load all historic data. In that case, the new sheet will only display the last 510 records of a symbol.
> After that, the new sheet is completely independent of the first sheet.

To view different sheets in one chart at the same time (chart window split)

- Add several sheets to a chart (see Adding and Organizing Sheets on page 87), for example:

- Set a different compression for every sheet, for example a daily compression for the first sheet, 60-minute compression for the second sheet and 5-minute compression for the third sheet. See Changing the Data Compression on page 175 for details.
- Place the mouse pointer on the split handle (the grey vertical bar) in the upper right corner of the chart window. The pointer changes.

- Hold the mouse button down and drag the handle downwards. The chart window is split in two parts. The second part contains an exact copy of the original chart. Every change that you do in one of the parts is replicated immediately in the other part.

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- You can now display different sheets in every split window: Click on the **Daily** tab in the top part of the chart, and on the **5min** tab in the bottom part of the chart, for example.

To close the split window

- Place the mouse pointer on the separation line between the two split parts.
- Hold the mouse button down and drag the separation line downwards.
- When the mouse pointer is beneath the lower border of the chart window, release the mouse button.

Reading Values from a Chart

Often, you want to read exact values about a time series from a chart. To do this, Professional provides you with two tools: The Data Info box that displays values interactively on the chart, and the DataBar that constantly displays the data values of the current mouse position in the Navigation pane.

Both tools show the same information:

- For all visible symbols: Date and time of the current data point (bar, candlestick), *Open*, *High*, *Low* and *Close* prices of all visible symbols at that point in time, *Volume* and *Open Interest*
- For studies, chartable expressions or drawing objects, the relevant values are displayed as well.

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Data Info box

The **Data Info** box is a transparent area in a corner of the chart. If a chart has several chart panes, each pane has its own **Data Info** box that shows only information about the symbols and other chart objects that are visible in this pane.

You can customize the Data Info box: Choose which drawing objects and time series values (*Open*, *High*, *Low* , *Close* etc.) should be shown in the box and decide if study values should be considered as well. For a better overview, all values for studies and drawing objects can be shown with the same color as the object they refer to. See Data Info Settings on page 347.

To display values in the Data Info box on demand

- Click on the **Select** icon in the **Drawing** toolbar:

Note The **Select** tool is active by default in any new chart.

- Click on the chart and hold the mouse button down.
- The values for the date / time of the point where you clicked is displayed in the **Data Info** box. The box disappears as soon as you release the mouse button.

Note If you click directly on a chart object, for example a symbol, drawing object or study, the **Data Info** box is not displayed. Instead, the object is selected.

To keep values visible in the Data Info box

- Click on the **Crosshair** or **Vertical Line** icon in the **Drawing** toolbar: or Click on the chart.
- The values for the date / time of the point where you clicked is displayed in the **Data Info** box. The box is visible until you deactivate the **Crosshair** or **Vertical Line** tool.
- You can move the crosshair on the chart with the arrow keys on your keyboard.

Note The **Crosshair** or **Vertical Line** tool will stay active as long as you do not deactivate it by clicking on the **Crosshair** or **Vertical Line** icon again. When you save a chart while the **Crosshair** or **Vertical Line** tool is active, this setting and its exact position on a chart will be saved as well.

You can also use the left and right arrow keys to activate the **Vertical Line** tool if the option **Use arrow keys (Left or Right) for activating the Vertical Line** under **Tools > Options > Chart** is activated. See Chart Settings on page 340.

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DataBar

The **DataBar** is a part of the Navigation pane.

If you want to customize the DataBar, you can change its font and colors. See Customizing the DataBar on page 143.

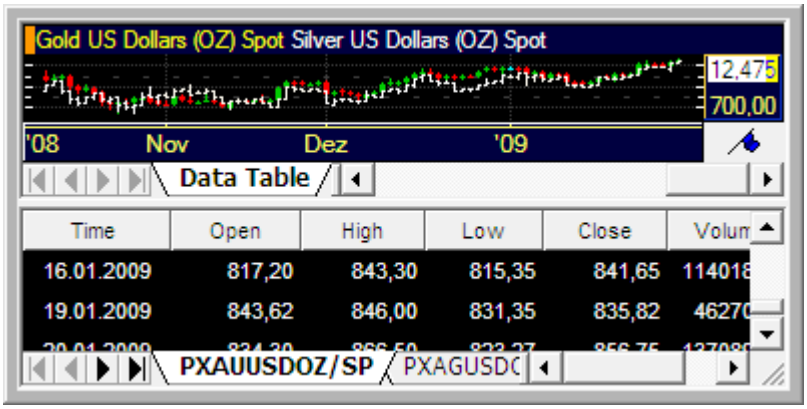
To display values constantly on the DataBar

- Click on the tab **DataBar** in the navigation pane.

- When you move the mouse pointer over the chart, the data values for the current position are constantly displayed in the DataBar.

Displaying the Data Table View

The data table shows the exact values of every data point (bar, candle etc.) in a tabular view. You can either display the data table in a separate window, or inside a split window on the chart. You can use the data table to verify the price values of the time series, or to hide specific data points on the chart.



When you display more than one symbol in a chart, the data table view shows several tabs at the bottom that allow you to switch between the values of the different symbols.

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To display the data table in a separate window

- Right-click the chart and choose **Data Table View**.

To display the data table in a split window on the chart

- Place the mouse pointer on the split handle (the grey vertical bar) in the upper right corner of the chart window. The pointer changes:

- *Right-click* the split handle, hold the right mouse button down and drag the handle downwards. The chart window is split in two parts. The second part shows the data table view.

> **Note** If you use the left mouse button instead of the right mouse button, the second part of the chart window shows an exact copy of the chart, including all sheets. See Using Sheets in Charts on page 211.

To close the split window

- Double-click the separation line between the two split parts.

To hide data points (bars, candles etc.) in a chart

- In the data table, highlight the row(s) that contain the data that you want to hide in the chart.

> **Note** You can select several rows at once with the CTRL or SHIFT key, in the same way as you would in a price page. See Selecting Rows or Columns of a Price Page on page 89.

- Right-click on a highlighted row and choose **Mark bar(s) as hidden**.
- The chosen data points (bars, candles etc.) are not displayed anymore on the chart. They are still visible in the data table, but marked in a different color.

> **Note** Hidden bars remain hidden in this chart even if you close the data table or split window. You can only display them again by changing their status in the data table view (see below).

To show hidden data bars again

- In the data table, highlight the hidden row(s) that contain the data you want to show on the chart again.
- Right-click on a highlighted row and choose **Hidden Bars > Unmark bar(s)**.
- The data points (bars, candles etc.) are now visible on the chart again.

> **Note** To show all hidden bars at once, choose **Hidden bars > Unmark all bars**.

To change the appearance of the data table

- Right-click the data table and choose **Properties**.
- On the left side of the **Options** dialog, select **Chart > Data Table**, if it is not selected already.

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- On the right side of the dialog, adapt the settings to your needs. See Data Table Settings on page 341 for details about the possible settings.

Customizing the Chart

When you create a chart, default settings are used for the chart panes, price and time scales, the time series and other chart objects. You can change how the chart looks like, how much historic data is loaded and plotted for a symbol, what type of price scale is used and so on.

Most settings can be adapted in the **Chart Properties** dialog. Some are accessed by right-clicking on the chart and choosing a command from the context menu, or by using the Data View button or a specific tool from the **Chart** or **Drawing** toolbars.

> **Note** To save and re-use the settings that you make for a chart, you can use templates. See Saving your Preferences in Templates on page 145.

Chart Properties dialog

The **Chart Properties** dialog lets you adapt the default chart settings to your needs. To display the dialog, right-click in the chart that you want to customize and select **Properties**. You can also hold the SHIFT key and double-click on the chart to open the dialog.

The dialog is made up of several *property sheets*. These sheets are arranged hierarchically into groups, that are displayed on the left side of the dialog as a tree view. The top group of property sheets is called **General** and contains the settings that apply to the whole chart, such as the appearance of the time scale or the data compression of the chart.

The other property sheets are grouped into panes, for example **Pane 1**, **Pane 2** etc. Many settings only apply to a specific chart pane, or an object inside a chart pane. Depending on what objects and panes you use in your chart, different property sheets will be available. Chart objects, such as symbols and drawing objects, can be customized per pane. This means that you could have for example two chart panes with the same symbol, but using different colors or a different price scale.

The group **Studies** contains the properties and settings of all studies that are currently visible on the chart. See Changing the Properties of Inserted Studies on page 309.

If you want to go directly to the settings for a specific chart object (for example, a trend line or the price scale), you can right-click on the object and choose **Properties** to go directly to the property sheet that controls the settings of this particular object.

You can find an overview of the possible property sheets in the section Customizing Charts on page 103.

If you want to change several chart property settings at once, and immediately see the effects that these changes will have on the chart, you can click **Apply** in the **Chart Properties** dialog. This will apply the new settings to the chart, but keep the **Chart Properties** dialog open so that you can make additional changes. To apply the settings and close the dialog in one step, click **OK** (like in other properties dialogs).

Customizing the Time Series

The time series is the visualization of a symbol with its current and historic data. For each point in time, the Open, Close, High and Low prices are plotted on the chart. You can change how the data is compressed (end of day, intraday or tick data – see Changing the Data Compression on page 175) and how the data is plotted on the screen (for example, as a line chart, bar chart, point and figure chart or else – see Changing the Chart Type on page 176).

Additionally, you can control how much historic data is displayed in the chart and what trading sessions are used in intraday charts, what styles and colors are used in the chart, and if you want to extend the time line to the future (that means, show an empty area at the right side of the chart to make room for trend lines or similar objects that extend into the future).

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Changing the Amount of Data Displayed in the Chart

You can control how much historical data is loaded into a chart. By default, the last 510 records are shown. This means for example that in daily charts the last 510 days are plotted, in tick by tick charts the last 510 ticks. If you want to extend the historical data, you have to change the *time region* for the chart.

When using intraday charts, you can also define *trading sessions* to choose when the trading session of the exchange starts. The default settings (based on the trading hours of the exchanges) are automatically loaded from the Market Data Server. You can also define more than one trading session, and assign different colors to them.

If you want to *show less data* on a chart, you can either cut the data history with the **Data Cut** tool, or hide specific data points (bars, candles etc.) on the chart in the data table view.

To change the time region of the chart

Note Be aware that Professional needs more system resources the more data you load in a chart. Keep the default setting unless you need older data or want to set the time region to a fixed period.

- Click on the arrow next to the **Time Region** icon on the **Chart** toolbar:
- Choose the time region that you want to use (default: 510 records).
- If you want to use a custom time region, choose **Custom**. The **Chart Properties** dialog is shown.
- On the left side of the dialog, select **General > Time Region**.
- On the right side of the dialog, choose the appropriate setting:

All	All available historical data of the symbol is loaded and displayed in the chart.
Last x …	All historical data for the last x minutes, hours, days, weeks, months or years is displayed. Enter the number and choose which period (minutes, days etc.) you want to use.
Records	The last x records (data points, bars, candles etc.) are displayed. Enter the number of records. The default setting is 510 records.
Period (from-to)	The historical data for a specific time period is loaded and displayed in the chart. Choose the begin and end date and time of the period. Check the **Begin** box to load all available data from the beginning of the time series up to the point in time that is set in the **to** field. Check the **Now** box to load all available data from the point in time that is set in the **from** field up to the most current record. The **Begin** and **Now** settings are dynamic and are updated constantly.

Note You can also extend the time line of a chart to the future with the **Extended Time Region** settings on this option sheet. See Extending the Time Line to the Future on page 224.

To adapt the trading sessions of a time series

All data for a symbol that does not fit into one of the trading sessions defined here is not displayed in the chart. Trading sessions are especially useful in intraday charts.

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Trading Sessions**. For example: **Pane 1 > EURUSD > Trading Sessions**.
- On the right side of the dialog, select the **Use custom settings** box.

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Note As long as the **Use custom settings** box is deactivated, the default trading sessions for the exchange that the symbol is traded on are used. These settings are derived from the Market Data Server. You can go back to the default settings later by clearing the check box again.

- You can now define up to four different trading sessions. Each trading session has the following properties:

Start	Start time of the trading session
End	End time of the trading session
Days of the Week	Days of the week that the trading session applies to: Sunday through Saturday
Color	Color used in trading session coloring (see Color-Coding Price Relations, Intervals or Trends on page 220)

- Choose whether your custom settings should only apply to this chart (**Apply trading session for this time series only**), or if they should be used for all charts with this symbol (**Apply trading session for this symbol in all documents**).

Note The trading sessions are always set in *exchange time*. However, you might have your *time zone* (see Time Zone Settings on page 348) set to something other than exchange time (for example local time). Thus, the time values that are displayed on the chart might appear different from the settings for the trading session.
For example, if your time zone is set to local time, and you are located in the Central European time zone, a trading session for the New York Stock Exchange that starts at 9:30 exchange time (Eastern Standard Time) will show on your chart as starting at 15:30 local time (Central European Time).

To cut the data history of a chart

- Click on the **Data Cut** icon in the **Drawing** toolbar:
- Click on the chart at the date / time that should be the beginning of the chart. All older data to the left of this point will be removed from the chart.

Note To undo this action, adapt the time region of the chart (see above).

To hide data points (bars, candles etc.) in a chart

You can hide specific data points in the data table view, so that they will not be displayed on the chart. For details, see Displaying the Data Table View on page 214.

Changing the Number of Decimal Places in Charts

You can change the number of decimal places that is used for a specific pane in charts.

You can change the number of decimal places that is used for both the underlying symbol and its options.

To change the number of decimal places for a chart pane

- Right-click the chart pane and choose **Set decimal places**.
- In the **Set decimal places** dialog, enter the number of decimal places that you want to apply to that chart pane.

Note The custom decimal places set for the chart pane will be applied to drawing tools, expressions, studies and all values in data info box except to **Volume** and **Open Interest**. You can also change this setting under **Tools > Options > General > Subscription** (see Subscription Settings on page 339).

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The decimal places set in the chart will only be used within that chart document and data table view.

Changing the Line Style

You can change the line style of a chart. These settings do also apply to other chart types besides Line charts and Kagi charts, because the line style also affects the bars in bar charts, empty candles in Candlestick and Heikin Ashi charts, the boxes of Point and Figure charts, etc.

The colors used for the time series in a chart are also defined here. For chart types that use more than one color, you can find more information in the next section, Color-Coding Price Relations on page 220.

Some of the line style settings are only available for certain chart types and compressions.

To change the line style of a time series

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Line Style**. For example: **Pane 1 > EURUSD > Line Style**.
- On the right side of the dialog, adapt the default settings to your needs. Some settings are only available for certain chart types and compressions.

Control	Description
Color	Color of the time series. This setting is visible in **Line**, **Stair Step** and **Kagi** charts in all compressions.
Style	Line style of visible lines. The line style applies for example to **Line** and **Kagi** charts, the bars in **Bar** charts or empty candles in **Candlestick** and **Heikin Ashi** charts. This setting is visible in **Line**, **Bar**, **Candlestick**, **Histogram**, **Points**, **Stair Step**, **Kagi** and **Heikin Ashi** charts in all compressions.
Weight	Weight of all visible lines in points. This setting is visible in **Line**, **Bar**, **Candlestick**, **Histogram**, **Points**, **Stair Step**, **Kagi** and **Heikin Ashi** charts in all compressions.
Use interval	Used for color-coding time intervals in end of day trading sessions. See Color-Coding Price Relations on page 220. This setting is visible in **Bar**, **Candlestick**, **Histogram** and **Points** charts with the compressions **Daily**, **Weekly** or **Monthly**.
Use price relation	Used for color-coding price relations for rising, falling and equal prices. See Color-Coding Price Relations on page 220. This setting is visible in **Bar**, **Candlestick**, **Histogram** and **Points** charts in all compressions.
Use trading session coloring	Used for color-coding intraday trading sessions. See Color-Coding Price Relations on page 220. This setting is visible in **Bar**, **Candlestick**, **Histogram** and **Points** charts with **Intraday** or **TickBar** compressions.
Trend coloring	Used for trend coloring. See Color-Coding Price Relations on page 220. This setting is visible in **Point and Figure**, **Three Line Break** and **Renko** charts in all compressions.
Use last bar color	Check to use different colors for the last bar, candlestick or data point, depending on rising or falling prices. See Color-Coding Price Relations on page 220. This setting is visible in **Bar**, **Candlestick**, **Histogram** and **Points** charts in all compressions.
Rollover Bar	Set the color for the rollover bar in continuation charts. See Continuous

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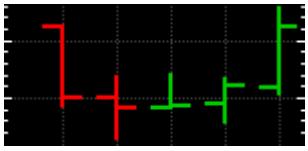
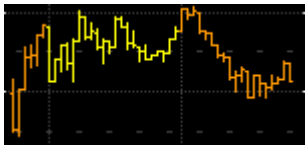
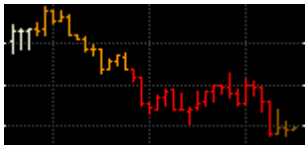
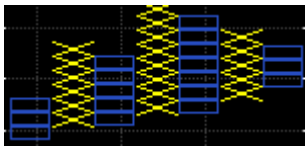
Contracts / Continuation Charts on page 234.

Header color	Set a custom color for the chart's header.

Color-Coding Price Relations, Intervals or Trends

Most chart types use more than one color to display the time series. Depending on the chart type, you have several options to color-code the bars, candlesticks, columns etc. of a time series:

	**Price relations**	Rising, falling and equal bars, candlesticks etc. are colored differently. This setting can only be used in **Bar**, **Candlestick** , **Histogram** and **Points** charts.
	**End of day intervals**	Time intervals are colored alternately. For daily charts, the color changes every month, for weekly and monthly charts, the color changes every year. This setting can only be used in **Bar**, **Candlestick**, **Histogram** and **Points** charts with the compressions **Daily**, **Weekly** or **Monthly**.
	**Intraday trading sessions**	Different trading sessions can have different colors. If you for example set up four equal-length trading sessions, the color of the time series will change every six hours. This setting can only be used in **Bar**, **Candlestick**, **Histogram** and **Points** charts with **Intraday** or **TickBar** compressions.
	**Trends**	Rising columns and falling columns are colored differently. These settings can only be used in **Point and Figure**, **Three Line Break** and **Renko** charts.

In **Bar**, **Candlestick**, **Histogram** and **Points** charts, you can also color the last bar or candlestick differently, depending on the last tick (rising or falling prices).

Note In **Line** and **Stair Step** charts you can also color-code price relations, intervals and trading sessions when you clear the option **Use only one color for Line charts** under **Tools > Options > Chart**. In **Kagi** charts, you can then color-code trends.

To color-code price relations

Note Price relations can only be color-coded in **Finance** charts, with the exception of **Line** and **Stair Step** charts.

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Line Style**. For example: **Pane 1 > EURUSD > Line Style**.
- On the right side of the dialog, select the option **Use price relation** in the section **Type of security coloring**.
- In the section **Border color**, select one of the following options:

Traditional Candlestick	Only available for **Candlestick** charts. Traditional candlesticks use only a single color for both candle bodies and borders. If the *Last* price is higher than the *Open* price of the candle, it is shown as an empty candle (transparent fill); else, it is shown as a full candle of the chosen color.

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Open/Last	The border colors depend on the relationship between the *Open* and *Last* prices of the data point: Choose a **Rising** color (*Last* > *Open*), **Falling** color (*Last* < *Open*) and **Equal** color (*Last* = *Open*).
Close/Last	The border colors depend on the relationship between the previous data point's *Close* and current data point's *Last* prices: Choose a **Rising** color (*Last* > previous *Close*), **Falling** color (*Last* < previous *Close*) and **Equal** color (*Last* = previous *Close*).

- In the section **Fill color** (only available for **Candlestick** charts), select the option **Open/Last** or **Close/Last** (see above) and choose the appropriate colors for the bodies of the candles.

To color-code time intervals in end of day compressions

Note Intervals can only be color-coded in **Finance** charts with the compressions **Daily**, **Weekly** or **Monthly**. In **Line** and **Stair Step** charts you cannot use interval coloring.

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Line Style**. For example: **Pane 1 > EURUSD > Line Style**.
- On the right side of the dialog, select the option **Use interval** in the section **Type of security coloring**.
- Select a color for the first time interval (**Color #1**) and a color for the second interval (**Color #2**).

Note The color used for the first time interval (**Color #1**) is also used for the text in the pane header. If you want to define a custom color for the header, check the option **Custom header color** at the bottom of the dialog. See also Changing the Font, Colors and Data of Headers on page 227.

To color-code intraday trading sessions

Note Trading sessions can only be color-coded in **Finance** charts with **Intraday** or **TickBar** compressions. In **Line** and **Stair Step** charts you cannot use trade session coloring.

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Line Style**. For example: **Pane 1 > EURUSD > Line Style**.
- On the right side of the dialog, select the option **Use trading session coloring** in the section **Type of security coloring**.
- The settings and colors for trading sessions must be set on the property sheet **Trading Sessions**. See Changing the Amount of Data Displayed in the Chart on page 217 for details.

To color-code trends

Note Trend coloring can only be used in **Point and Figure**, **Three Line Break** and **Renko** charts.

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Line Style**. For example: **Pane 1 > EURUSD > Line Style**.
- On the right side of the dialog, select the colors for **Rising** and **Falling** trends in the section **Trend coloring**.

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To change the color of the last bar, candlestick or data point

Note You can only use the **Last bar color** in **Finance** charts, with the exception of **Line** and **Stair Step** charts.

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Line Style**. For example: **Pane 1 > EURUSD > Line Style**.
- On the right side of the dialog, select the options **Border** and/or **Fill** in the section **Last Bar Color**.
- Select the colors used for **Rising**, **Falling** and **Equal** prices.

To change the color of the rollover bar

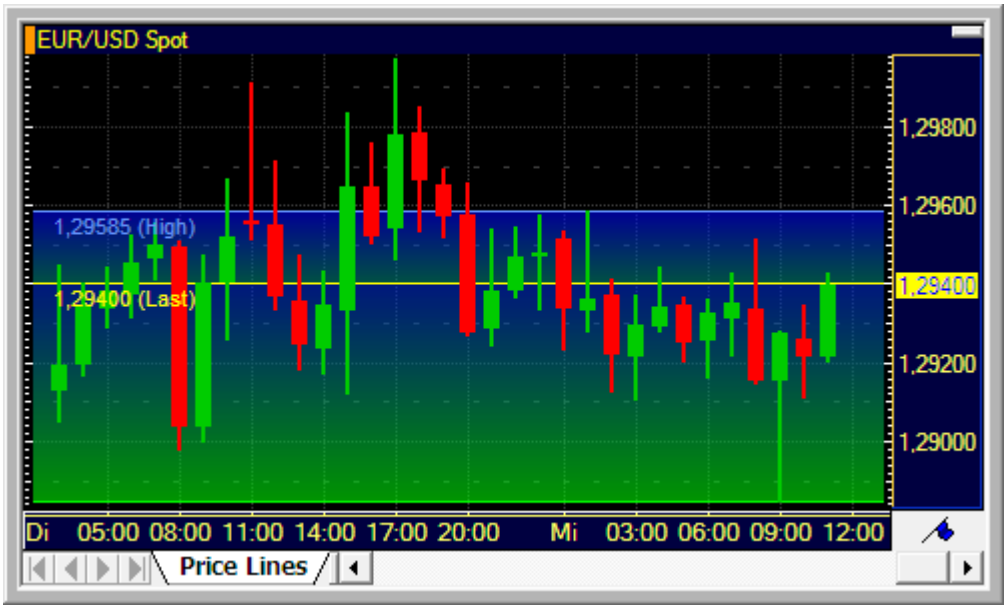
Note The **Rollover Bar** is only available in continuation charts. See Continuous Contracts / Continuation Charts on page 234.

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Line Style**. For example: **Pane 1 > FDAX 2009H,CC > Line Style**.
- On the right side of the dialog, select a color used for the **Rollover Bar**.

Showing Price Lines at the Level of Current Prices

You can show the current value of certain prices as a horizontal line on the chart that dynamically changes its level each time new price information arrives. For these so-called price lines, you can choose the line style and show / hide labels, prices and field names. When you display more than one price line on a chart, you can also use a color gradient between two price lines.

The price line is always based on the current daily data. This means you can change the data compression of a chart (for example to an intraday compression) and still display the day's *Open*, *High*, *Low*, *Last* etc. on the chart.



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To show a price line at the level of current prices

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Price Display**. For example: **Pane 1 > ANDR > Price Display**.
- On the right side of the dialog, select the check boxes next to the prices for which you want to show a price line.

To change the line style of the price lines

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Price Display**. For example: **Pane 1 > ANDR > Price Display**.
- On the right side of the dialog, adapt the **Line** settings to your needs.

Control	Description
Color	Color of the price lines
Style	Line style of the price lines
Weight	Width of the price lines
Apply to all levels	Check to use the same line style for all price lines. Clear to use individual line styles for each price line. You can then click on each price to see / change the line style settings of this line.

To show a color gradient between two price lines

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Price Display**. For example: **Pane 1 > ANDR > Price Display**.
- On the right side of the dialog, select **Show color gradient**.
- In the **Color Gradient** section, choose the **Zone** (between two visible price lines) for which you want to set a gradient.
- Adapt the rest of the settings to your needs.

Control	Description
Start Color	First color that is used for the gradient
End Color	Second color that is used for the gradient
Transparency	Transparency of the shaded area in percent (0% = solid)

To display price labels on the vertical scale

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Price Display**. For example: **Pane 1 > ANDR > Price Display**.
- On the right side of the dialog, choose the label that you want to use to mark the prices on the price scale in the **Scale Labels** section:

No Label	No label is shown to mark the chosen price
Price	A rectangular marker with the chosen price is displayed
Left Arrow	An arrow showing to the left is displayed at the position of the chosen price
Right Arrow	An arrow showing to the right is displayed at the position of the chosen price

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To display prices and field names for the price lines

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Price Display**. For example: **Pane 1 > ANDR > Price Display**.
- On the right side of the dialog, select **Show values** to show the price next to the price line.
- Select **Show field names** to also show the field (for example **Last**).

To choose the area of the chart where the price lines are shown

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Price Display**. For example: **Pane 1 > ANDR > Price Display**.
- On the right side of the dialog, select **Show line in Chart area** to show the price lines in the chart area where the time series is plotted.
- Select **Show line in extended time area** to also show the price lines in the area to the right of the last bar.

To consider price lines in automatic scaling

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Price Display**. For example: **Pane 1 > ANDR > Price Display**.
- On the right side of the dialog, select **Consider Price Lines in automatic scaling**.

Extending the Time Line to the Future

You can add blank space to the right of the last plotted bar, for example to make room for drawing objects that extend into the future. You can either choose a number of "future bars" or extend the time scale until a certain date.

If you want to also adapt the blank space between the time series and the top and bottom of a chart pane, you have to set the pane margins. See Creating and Organizing Chart Panes on page 209 for details.

To extend the time line to the future by a number of bars

- Right-click on the chart and select **Extend time line > Set extend time**.
- In the **Extend time** dialog, select the option **Number of bars**.
- Enter the number of (empty) bars that you want to add to the right of the last bar.
- Click **OK**. The time scale of the chart will be extended to the future to accommodate for the number of bars that you have entered. For example, if you choose 10 future bars in a daily chart, the time line is extended for ten days into the future.

> **Note** You can also extend the time line of a chart by changing the **Extended Time Region** settings on the option sheet **Time Region** in the **Chart Properties** dialog. See also Changing the Amount of Data Displayed in the Chart on page 217.

To extend the time line to the future until a certain date / time

- Right-click on the chart and select **Extend time line > Set extend time**.
- In the **Extend time** dialog, select the option **Extend to time**.
- To choose a date from the calendar, click on the arrow next to the date, or type the date into the fields.

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- To choose a time, click on the element of the time field that you want to change (hours, minutes or seconds). Then, change it with the arrows on the right, or type the new time into the field.

> **Note** The time field is only available in intraday charts.

- Click **OK**. The time scale of the chart will be extended to the future until the date / time that you have entered.

To extend the time line to the future with drag and drop

- Click on the **Free Hand** icon on the **Drawing** toolbar:
- The mouse pointer changes:

- Click on the chart, hold the mouse button down and drag the chart to the left. The time line is extended to the future according to the amount that you have dragged the chart.

> **Note** The **Free Hand** tool will stay active as long as you do not use another tool. To deactivate it, click on another tool icon, or press the Esc key on your keyboard. When you save a chart while the **Free Hand** tool is active, this setting will be saved as well.

To remove the extended time line

- Right-click on the chart and select **Extend time line > Remove extend time**.

To reset the chart to its defaults (zooming, scaling and margins)

- Click the **Data View** button and choose **Chart reset**.

Customizing the Chart Background and Headers

You can customize the color of the chart background and the appearance of the chart grid (vertical and horizontal lines). Every chart pane can have different settings here.

As every chart pane also has a header, you can also choose the font, colors and data shown in the header of every chart pane.

Changing the Background Color of a Pane

Each chart pane can have individual background colors. The background can be single-colored, alternately colored based on time intervals, or filled with a two-color gradient. You can also choose the size of the margins at the top and bottom of the chart pane and set the header transparency here.

For more information about chart panes, see Creating and Organizing Chart Panes on page 209.

To change the background color and the pane margins

- Right-click in the chart pane and choose **Properties**.
- In the **Chart Properties** dialog, click the name of the chart pane, for example **Pane 1**.
- Adapt the following options to your needs:

Background color

Base color	Choose the primary background color for this chart pane.
Secondary color	Choose the secondary background color for this chart pane. This color is only

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	used for gradients or alternating fills.
Fill type	Choose the fill type for this chart pane: **Solid** The chart pane is colored with the **Base color**. **Vertical gradient** The chart pane is colored using a vertical gradient starting with the **Base color** and ending with the **Secondary color**. **Horizontal gradient** The chart pane is colored using a horizontal gradient starting with the **Base color** and ending with the **Secondary color**. **Alternating** The **Base color** and the **Secondary Color** are used on the chart background in turns, depending on the chosen **Interval**.
Interval	Choose the time period that is used for alternating the background colors when using the fill type **Alternating**.
Active pane indicator color	Choose the color of the active pane indicator (the rectangle shown at the left edge of the pane header when the chart pane is selected / active).

Pane margins

Top	Enter the size of the top margin in pixels. The maximum size is 100 pixels.
Bottom	Enter the size of the bottom margin in pixels. The maximum size is 100 pixels.

Transparent header

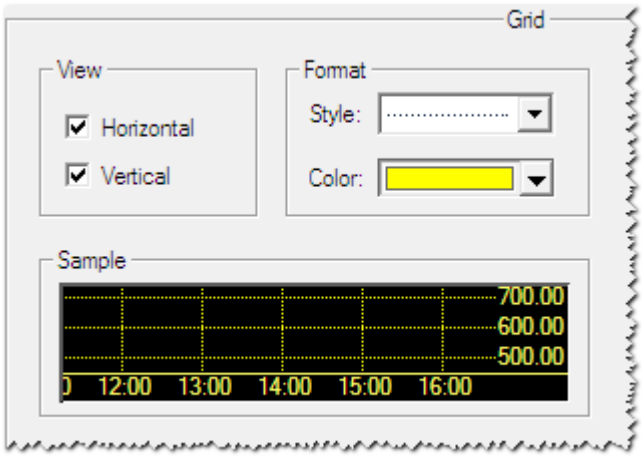
Use Transparent Header	If selected, the pane header is transparent. The time series and other chart objects may overlap with the header. You can set the header transparency under **General > Misc**. See Changing the Font, Colors and Data of Headers on page 227.

Changing the Style and Colors of the Grid

You can change the appearance and color of the grid for each chart pane. The grid consists of horizontal and vertical lines that show the different price levels and time intervals.

To change the grid style of a pane

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **Grid**. For example: **Pane 1 > Grid**.
- On the right side of the dialog, adapt the default settings to your needs.
- You can see a preview of your settings in the **Sample** window at the bottom of the dialog.



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Control	Description
Horizontal	Check to display horizontal grid lines at price levels
Vertical	Check to display vertical grid lines at time intervals
Style	Line style of all visible grid lines
Color	Color of all visible grid lines

Changing the Font, Colors and Data of Headers

You can change the font of the pane header and its background. The background of a header can not only have a single color, but can also display a gradient between two colors. You can also use a transparent header. If you want to display additional data in the header, for example Close values or Volume, you can select what data should be displayed in every pane header.

Each chart pane can have a different font and color for its header.

To change the font used in a header

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **Header**. For example: **Pane 1 > Header**.
- On the right side of the dialog, adapt the default settings to your needs.
- You can see a preview of your settings in the **Sample** window at the bottom of the dialog.

Control	Description
Font	Type of font used for the header
Font Size	Size of the font used for the header
Foreground	Color of the header text This setting only applies to study names in the header of a chart. The color of time series data in the header is determined by the first interval color for the time series, used also for color-coding time intervals. If you want to define a custom color for the time series data of the header, check the option **Custom header color** at the bottom of the option sheet **Line Style**. See Color-Coding Price Relations, Intervals or Trends on page 220.
Bold	Check to use a bold style for the header
Italic	Check to use an italic style for the header

To change the background colors of a header

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **Header > Fill Type**. For example: **Pane 1 > Header > Fill Type**.
- On the right side of the dialog, choose the colors and fill type for the header:

Solid fill	The header is thoroughly colored with a single **Color**.
Vertical fill	The header is colored using a vertical gradient starting with the **First color** (this is equal to the **Color** on solid fills) and ending with the **Second color**.
Horizontal fill	The header is colored using a horizontal gradient starting with the **First color** (this is equal to the **Color** on solid fills) and ending with the **Second color**.

Note Vertical and horizontal fills cannot be applied to transparent headers (see below).

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To make the header transparent

- In the **Chart Properties** dialog, click the name of the chart pane, for example **Pane 1**.
- Select the option **Use Transparent Header**. See Changing the Background Color of a Pane on page 225.

To set the header transparency

> **Note** This setting applies to transparent headers in all chart panes.

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select **General > Misc**.
- On the right side of the dialog, drag the **Headers transparency** control to the right to increase transparency, or to the left to decrease transparency.

To change the data displayed in the header

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **Header > Data**. For example: **Pane 1 > Header > Data**.
- On the right side of the dialog, select all data fields that you want to display in the header. You can use the buttons **Select All** or **Unselect All** to select or unselect all data fields at once.

Customizing Price and Time Scales

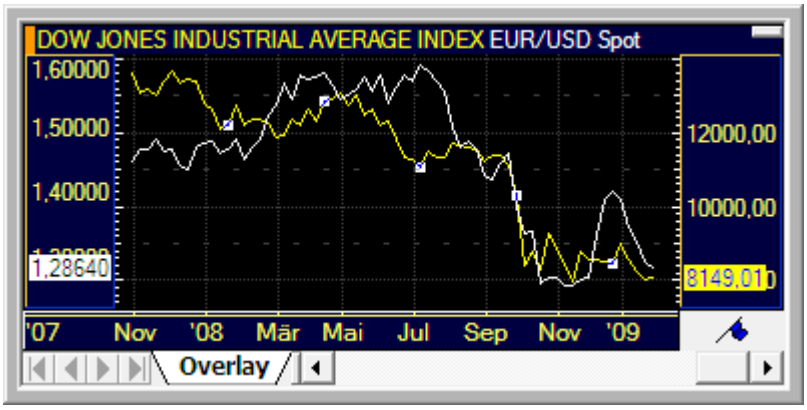
The price and time scales of a chart can be adapted in their functionality (scaling) and appearance.

Price scales can be scaled differently, which can also affect how much of the time series is shown on the screen and if the scaling is dynamically adapted when scrolling to the left or right. You can also choose a different type of scale (arithmetic, logarithmic or percentage), change the marker that shows the last price of a symbol, and adapt fonts and colors of the scale. Each chart pane can have its own price scale settings, and you can also choose a different appearance for a second price scale inside the same pane.

For the *time scale* you can change the font and colors used. As there is only one horizontal scale per chart, you cannot have different time scales in the different chart panes.

Inserting a Second Price Scale

In addition to the main price scale (usually shown on the right side of the chart), you can also add a second price scale to the chart (on the left side) and attach symbols to it. This is useful when you have overlaid several symbols in a chart whose prices differ a lot from each other, so that they cannot be reasonably displayed on the same price scale.



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You can only connect overlaid symbols to the second price scale.

To show the second price scale

- Right-click on the chart and select **Show Second Scale**.

To connect a symbol to the second price scale

- Right-click on the symbol that you want to connect to the second price scale and select **Connect to Second Scale**.

> **Note** In order to use this command, more than one symbol must be overlaid in the chart.

To disconnect a symbol from the second price scale

- Right-click on the symbol that you want to disconnect from the second price scale and select **Disconnect from Second Scale**.

To hide the second price scale

- Right-click on the chart and select **Hide Second Scale**.

Changing the Scaling of the Price Scale

You can change the scaling of the price scale to dynamically adapt to the section of the time series that is shown on the screen, or to relate to the fixed maximum and minimum points of the loaded historic data.

See also Scaling the Time Series to the Screen on page 206.

To change the vertical scaling of a chart pane

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **V.Scale > Scale**. For example: **Pane 1 > V.Scale > Scale**.
- On the right side of the dialog, choose between the following settings:

Screen	Only the part of the time series that is visible on the screen is taken into account for vertical scaling. When you scroll the chart to the left or right with the scrollbar, the scaling is adjusted dynamically so that the maximum of the visible time series is always at the top of the chart, and the minimum of the visible time series is at the bottom of the chart. This is the default setting.
Entire data series	The entire loaded time series is taken into account for vertical scaling, including historic data that might not be visible at the moment. When you scroll the chart to the left or right with the scrollbar, the scaling does not change, as the size of the vertical scale has been determined already by using the maximum and minimum of the entire time series. This setting might lead to blank spaces at the top or bottom of the visible part of the chart, especially when you load a lot of historic data to your chart.
User defined	Enter a **Maximum** and **Minimum** value for the price scale. All parts of the time series that would be plotted above or below these prices are cut off.

> **Note** When you use the **Screen** or **Entire data series** options, all reference points of drawing objects (text, arrows, lines etc.) are also taken into account when calculating the maximum and minimum of the time series, so that drawing objects always remain visible on the chart.

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Changing the Price Display of the Price Scale

You can change the way that the prices are displayed on the vertical price scale. In addition to using a different type of price scale (arithmetic, logarithmic or percentage scale), you can also use letters to abbreviate long numbers (1K instead of 1000), and remove unnecessary trailing zeros (for example unnecessary decimal places) from the display.

To change the type of the price scale

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **V.Scale > Type**. For example: **Pane 1 > V.Scale > Type**.
- On the right side of the dialog, select the scale type that you want to use:

Linear Price	Use an *arithmetic scale* that is divided into units of equal distance. This scale is useful to represent absolute increments of change.
Logarithm Price	Use a *logarithmic* (or *ratio*) *scale* that is divided into units where the ratio difference between two numbers is always represented by the same distance. This scale is useful because equal distances on the scale represent an equal percentage change.
Linear Percentage	Use a *percentage scale* that displays the performance of a symbol relative to a starting point. The first loaded *Close* price of the symbol represents 0%. All later price developments are shown as percentages relative to this starting point. You can set a different starting point.

Note You can also change the type of the vertical scale with the **Chart Type** icon in the **Chart** toolbar. For details, see Changing the Type of the Price Scale on page 185.

To use letters for an abbreviated display of prices (1000 = 1K)

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **V.Scale > Scale**. For example: **Pane 1 > V.Scale > Scale**.
- On the right side of the dialog, select the option **Use letters for number presentation**.

To calculate chartable expressions relative to their own start point on percentage scales

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **V.Scale > Scale**. For example: **Pane 1 > V.Scale > Scale**.
- On the right side of the dialog, select the option **Chartable Expressions calculate relative to their own start point when scale is set to Linear Percentage**.

To remove trailing zeros on the price scale

Note Trailing zeros are removed only when they hold no information. This setting applies to all chart panes.

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select **General > Misc**.

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- On the right side of the dialog, select the option **Remove unnecessary trailing zeros on Vertical Scale**.

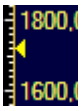
Changing the Labels on Price Scales

On the price scale, markers or labels show the current values of the displayed symbols or studies. You can change these labels or remove them altogether.

Each chart pane can have different labels.

To display price labels on the vertical scale

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Price Display**. For example: **Pane 1 > ANDR > Price Display**.
- On the right side of the dialog, choose the label that you want to use to mark the prices on the price scale in the **Scale Labels** section:

No Label		No label is shown to mark the chosen price
Price		A rectangular marker with the chosen price is displayed
Left Arrow		An arrow showing to the left is displayed at the position of the chosen price
Right Arrow		An arrow showing to the right is displayed at the position of the chosen price

Note See also Showing Price Lines at the Level of Current Prices on page 222.

To display labels for studies on the vertical scale

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **V.Scale > Label** (or **Second V.Scale > Label** for the additional price scale). For example: **Pane 1 > V.Scale > Label**.
- On the right side of the dialog, choose the label that you want to use to mark the last value of the displayed study on the price scale.

No Marker	No label is shown to mark the last value of the study
Marker	A rectangular marker with the last value of the study is displayed
Left Arrow	An arrow showing to the left is displayed at the position of the last value of the study
Right Arrow	An arrow showing to the right is displayed at the position of the last value of the study

Changing the Font and Colors of Price Scales

You can change the font of the prices that are displayed on the price scale, the color of the text and the background color of the price scale. The background of a price scale can not only have a single color, but can also display a gradient between two colors.

Each chart pane can have a different font and color on its price scales.

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To change the font used in a price scale

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **V.Scale** (or **Second V.Scale** for the additional price scale). For example: **Pane 1 > V.Scale**.
- On the right side of the dialog, adapt the default settings to your needs.
- You can see a preview of your settings in the **Sample** window at the bottom of the dialog.

Control	Description
Font	Type of font used for the price scale
Font Size	Size of the font used for the price scale
Foreground	Color of the text used in the price scale
Bold	Check to use a bold style for the price scale
Italic	Check to use an italic style for the price scale

To change the colors of a price scale

- Right-click on the chart pane and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, and then **V.Scale > Fill Type** (or **Second V.Scale > Fill Type** for the additional price scale). For example: **Pane 1 > V.Scale > Fill Type**.
- On the right side of the dialog, choose the colors and fill type for the price scale:

Solid fill	The price scale is thoroughly colored with a single **Color**.
Vertical fill	The price scale is colored using a vertical gradient starting with the **First color** (this is equal to the **Color** on solid fills) and ending with the **Second color**.
Horizontal fill	The price scale is colored using a horizontal gradient starting with the **First color** (this is equal to the **Color** on solid fills) and ending with the **Second color**.

Changing the Font and Colors of the Time Scale

You can change the font of the dates and times that are displayed on the time scale, the color of the text and the background color of the time scale. The background of a time scale can not only have a single color, but can also display a gradient between two colors.

To change the font used in the time scale

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select **General > H.Scale**.
- On the right side of the dialog, adapt the default settings to your needs.
- You can see a preview of your settings in the **Sample** window at the bottom of the dialog.

Control	Description
Font	Type of font used for the time scale
Font Size	Size of the font used for the time scale
Foreground	Color of the text used in the time scale
Bold	Check to use a bold style for the time scale
Italic	Check to use an italic style for the time scale

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To change the colors of the time scale

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select **General > H.Scale > Fill Type**.
- On the right side of the dialog, choose the colors and fill type for the time scale:

Solid fill	The time scale is thoroughly colored with a single **Color**.
Vertical fill	The time scale is colored using a vertical gradient starting with the **First color** (this is equal to the **Color** on solid fills) and ending with the **Second color**.
Horizontal fill	The time scale is colored using a horizontal gradient starting with the **First color** (this is equal to the **Color** on solid fills) and ending with the **Second color**.

Customizing Chart Objects

A chart can hold several chart objects: Symbols (time series), chartable expressions (see Inserting a Chartable Expression on page 189), drawing objects such as trend lines (see Drawing Tools on page 244) and studies (indicators or signals, see Analysis Tools on page 299). You can change the properties of each of these objects, for example its color or line style.

The **Format Objects** dialog offers you an easy way to get an overview about all objects that are present in a chart, gives you easy direct access to the properties of each object and lets you temporarily hide or permanently delete objects from your chart.

To change the properties of chart objects

- On the **Format** menu, click **Objects**.

> **Note** You can also click on the **Chart Objects** icon in the **Chart** toolbar:

- In the **Format Objects** dialog, choose the object that you want to change.
- Click **Format**. The **Chart Properties** dialog is opened with the correct object already pre-selected.
- For more information about the different settings available, see:
  - Symbol / time series: Customizing the Time Series on page 216
  - Drawing objects: Customizing Drawing Objects on page 270
  - Studies: Setting the Parameters of a Study on page 302 and Defining the Appearance of a Study on page 305

To delete chart objects

> **Note** *This action cannot be undone.* This will delete the selected chart object with all its settings.

- On the **Format** menu, click **Objects**.
- In the **Format Objects** dialog, choose the object that you want to delete.
- Click **Delete**.
- If you want to automatically close all chart panes that are now empty because no objects are present there anymore, select **Close empty panes**.
- Click **OK**. The object is removed from the chart.

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To hide (show) chart objects in all chart types and data compressions

Note Visible chart objects are displayed with a blue check mark on the left in the **Format Objects** dialog.

- On the **Format** menu, click **Objects**.
- In the **Format Objects** dialog, choose the object that you want to hide (or show).
- Click **Hide** to hide a chart object, or **Show** to display a hidden chart object again.

To add (remove) drawing objects for certain chart types and data compressions

You can automatically show or hide drawing objects in certain chart types or data compressions. To do this, you have to add drawing objects to (or remove them from) certain chart types or data compressions. This function should be used in combination with the **Hide** property of drawing objects. For more information, see Hiding Drawing Objects on page 294.

- On the **Format** menu, click **Objects**.
- In the **Format Objects** dialog, choose the drawing object that you want to add to (or remove from) the current chart type and data compression.
- Click **Add** to add the drawing object to the current chart type and data compression, or **Remove** to remove it from the current chart type and data compression.

Note Removing a drawing object from a chart type and data compression is not the same as deleting a drawing object. The drawing object remains in the chart, it is only not visible (hidden) in the current chart type and data compression.

Continuous Contracts / Continuation Charts

All futures contracts have a limited lifetime. After a certain date (the expiration date), they are not traded anymore. If you want to chart a longer history of a data for technical analysis, you have to find a way to combine several futures contracts together. This can be done with continuation charts.

Continuation charts use virtual futures contracts, so-called *continuous contracts*, and plot them on the chart. A continuous contract is constructed with data from several normal futures contracts. In the easiest construction method, whenever one contract expires, you continue with the data of the next contract. However, this simple method often leads to price gaps in the chart, and can be misleading, because usually a contract has lower trading volume and open interest already for some time before its expiration date. Therefore, more sophisticated methods to merge the different contracts together have been developed. Many of them are available in TeleTrader Professional.

When you create a continuation chart, you define some initial settings (you can later change these settings of course). With these settings, you can control what futures contracts (expiration months) are used for constructing the continuation chart, when the switch (rollover) between two contracts will take place, and if and how the prices of older contracts are adjusted to avoid gaps in the chart on rollover.

Continuation charts look like normal charts, except that they have an additional marker to show you when the rollover from one contract into the next took place. This rollover bar, candle or data point is shown in a different color than other bars on **Financial** charts (with the exception of **Line** and **Stair Step** charts).

To change the color of the rollover bar

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Line Style**. For example: **Pane 1 > FDAX 2009H,CC > Line Style**.
- On the right side of the dialog, select a color used for the **Rollover Bar**.

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Creating a Continuation Chart

You can create a continuation chart only for futures. The document type **Continuation Chart** is only available when the symbol that you want to open is a futures contract.

A continuation chart is created in the same way as all other documents, which means that you can for example open it from the QuickBar, from the Symbol Search results, from other documents like price pages or from the symbols that you have stored in FastLook. For more information, see Creating Charts and Opening Documents from a Chart on page 174.

If you want to use a chart template for your continuation chart, the same templates are available like for the normal chart documents.

When you open a continuation chart from the Symbol Search results, you can already adapt the continuation settings before opening the continuation chart document. You can of course later change theses settings at any time (see Changing Continuation Settings on page 235).

To open a futures contract in a chart with custom continuation settings

- On the **File** menu, click **New Document**.
- In the **New Document** dialog, click on the **Chart** tab.
- In the **Template** pane on the left side, click on the template that you want to use. You can see a preview of the template in the **Preview** pane on the right side.
- Click **OK**. The **Symbol Search** dialog is displayed.
- Enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol that you want to open as a continuation chart.
- Click on the **Continuation** tab and change the continuation settings to your needs. See Changing Continuation Settings on page 235 for details.
- Click **OK** on the **Continuation** tab. The new continuation chart is formatted with the chosen template.

> **Note** If you click **OK** on the **Symbol Search** tab instead of on the **Continuation** tab, a normal chart document will be opened.

Changing Continuation Settings

Continuation charts can be constructed in different ways. Data from several futures contracts has to be used, because every futures contract expires at a certain date and cannot be traded afterwards.

With the continuation settings, you can control what futures contracts (expiration months) are used for constructing the continuation chart, when the switch (rollover) between two contracts will take place, and if and how the prices of older contracts are adjusted to avoid gaps in the chart on rollover.

To change the continuation settings

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Continuation**. For example: **Pane 1 > FDAX 2009H,CC > Continuation**.
- On the right side of the dialog, adapt the default settings to your needs.

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Symbol settings

With these settings, you can control what contract is used as the current contract with real prices in the continuation chart and what expiration months are used to construct the continuous contract.

Control	Description
Symbol	Unique identification of the used symbol. You can replace it with the ID of another symbol to change the symbol used in the chart, but we recommend to use the **Change Symbol** dialog instead. See Changing Symbols on page 73.
Forward contract	Forward contract that is used as the current contract in the continuation chart, that means the contract that all other prices are back-adjusted to. The default setting is 1, which means that the current contract is the front month. This setting is not connected to the rollover date in any way.
Control months	Contract expiration months that are used for creating the continuous contract. By default, all available months are included.
Time Frame	Data compression used for the continuation chart - **Daily** or intraday (**Minutes**). This setting is only available on the **Continuation** tab in the **Symbol Search** dialog. For changing the data compression later, see Changing the Data Compression on page 175.

Rollover settings

These settings control when to switch (roll over) from one contract to the next. You can either roll based on the expiration date / month of a contract, or based on its open interest / volume.

For details about rollover and the different options, see Rollover of Continuous Contracts on page 237.

Control	Description
Trigger	Condition that is used to trigger the rollover into the next contract. This can be a specific date, open interest, volume or a combination.
Number of days … from … Months prior	Details for the date rollover condition. These settings are only visible when **Trigger** is set to **Date**.
Confirmation	Details for the open interest or volume rollover conditions. This setting is only visible when **Trigger** is set to **Open Interest**, **Volume** or a combination of both.
Timing	Determines when the rollover takes place as soon as the trigger condition is met. This setting is only available when **Trigger** is set to **Open Interest**, **Volume** or a combination of both.

Adjustment settings

When splicing the different contracts together, you can let Professional adjust the prices of older contracts to avoid gaps in the chart. These settings control if and how the older prices are adjusted. The current contract is always shown with its real prices.

For details about price adjustment and the different options, see Back Adjustment of Continuous Contracts on page 239.

Note The adjustment settings are not used for continuation charts with weekly or monthly compression.

Control	Description

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Pricing	Determines how the price difference between the old and the new contract is calculated to splice the contracts together.
Accumulation	Determines if the prices of older contracts are adjusted to the current contract, and in what way.

Rollover of Continuous Contracts

As futures contracts expire at a certain date, a continuation chart has to be constructed with data from several futures contracts. The so-called rollover (switch) between one contract and the next can be triggered by different conditions. TeleTrader Professional supports both rolling on a fixed date, or rolling based on a rise of open interest and/or volume in the next contract.

Rollovers are always calculated using daily data (end of day data), even when you are using an intraday continuation chart. This means that a rollover will never occur intraday, but always between trading sessions (days).

Rollover triggered by date

You can roll to the next contract on a certain date, often based on the expiration date of the front month contract (the contract that will expire next).

The rollover date must always be a trading day. When the date that you specify (for example, two days before the expiration date), is a non-trading day, such as a holiday or weekend, the rollover will occur on the next trading day after this date.

Note The front month contract is not the same as the current contract. If you choose to display a later contract as the current contract (**Forward contract** setting is greater than 1), the rollover date will still be calculated based on the expiration date / month of the front month contract.

To trigger rollover on a certain date

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Continuation**. For example: **Pane 1 > FDAX 2009H,CC > Continuation**.
- On the right side of the dialog, choose the option **Date** from the **Trigger** list.
- In the **From** list, choose whether you want to calculate the rollover date based on the expiration date of the contract, or based on the start or end of the month.

Expiration date	Rollover will occur on or several days before the expiration date of the front month contract.
Start of month	Rollover will occur several days after the start of the month in which the front month contract expires.
End of month	Rollover will occur several days before the end of the month in which the front month contract expires.

- In the **Number of days** field, enter the number of days that should be between the expiration date or start / end of the month and the rollover date. For example, if you want a rollover on the tenth day after the start of the expiration month, enter 10.

Note If the rollover date is calculated based on the expiration date of the contract, the numbers shown will be negative, which means that rollover will occur the specified number of days *before* the expiration date. If you enter 0, rollover will occur exactly on the expiration date. If you use a later contract as the current contract (**Forward contract** setting is greater than 1), you can also enter positive numbers, which means that rollover can also occur after the expiration date of the front month contract.

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- If the rollover date is calculated based on the start or end of the expiration month, you can additionally specify that the rollover will occur one or several months before the expiration month. Enter the number of months in the **Months prior** field. The default setting is 0, which means that the rollover will occur on the specified date in the expiration month.

Rollover triggered by open interest and/or volume

You can roll to the next contract when the open interest / volume of the next contract after the front month contract exceeds the open interest / volume of the front month contract.

As the rollover date is calculated using daily (end of day) open interest / volume data, the rollover will occur one or two days after the rollover trigger. You can influence the timing of the rollover with the **Timing** setting (see below).

Note The front month contract is not the same as the current contract. If you choose to display a later contract as the current contract (**Forward contract** setting is greater than 1), the rollover date will still be based on the open interest / volume of the front month contract (the contract that expires next).

To trigger rollover based on open interest and/or volume

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Continuation**. For example: **Pane 1 > FDAX 2009H,CC > Continuation**.
- On the right side of the dialog, choose an open interest or volume option from the **Trigger** list:

Open Interest	Rollover will be triggered when the open interest of the next contract is higher than the open interest of the front month contract.
Volume	Rollover will be triggered when the volume of the next contract is higher than the volume of the front month contract.
Open interest and volume	Rollover will be triggered when both open interest and volume of the next contract are higher than the open interest and volume of the front month contract.
Open interest or volume	Rollover will be triggered when either open interest or volume of the next contract are higher than the open interest or volume of the front month contract.

- From the **Confirmation** list, choose whether one trigger is enough to roll the contract, or if Professional should wait for more triggers before rolling to the next contract.

Roll on first trigger	Rollover will occur when the trigger condition is met for the first time.
Roll on second consecutive trigger	Rollover will occur when the trigger condition is met two times in a row.
Roll on third consecutive trigger	Rollover will occur when the trigger condition is met three times in a row.
Roll on fourth consecutive trigger	Rollover will occur when the trigger condition is met four times in a row.

Timing after the rollover has been triggered

When the rollover is triggered by open interest or volume, the fact that the chart should be rolled into the next contract is only known at the end of the day, because daily (end of day) open interest / volume data is used to calculate the trigger. This means that the rollover can occur the next trading day at the earliest. When the rollover is done, a rollover bar will be shown on the chart in a different color. The prices of this rollover bar are already the prices of the new contract.

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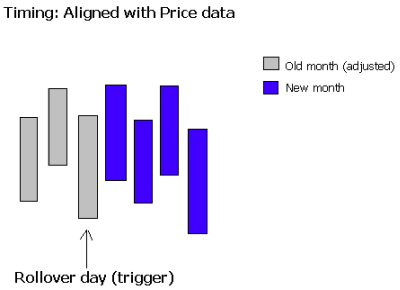
To change the timing settings

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Continuation**. For example: **Pane 1 > FDAX 2009H,CC > Continuation**.
- On the right side of the dialog, choose an option from the **Timing** list:

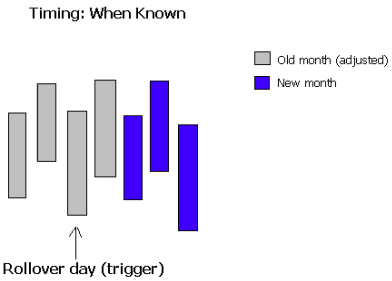
Align with price data

Rollover will occur on the day after the rollover was triggered with an open interest or volume trigger. The day after the trigger will already start with the *Open* price of the new contract.



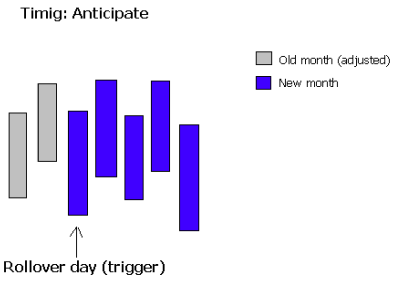
When known

Rollover will occur two days after the rollover was triggered with an open interest or volume trigger. The day after the trigger will still show the prices of the old contract, the *Open* price of the new contract will start the following day.



When you use a **Date** trigger, rollover will always occur on the exact date that you specify in the trigger settings, therefore the option **Timing** is not available. The chosen day will already start with the *Open* price of the new contract.

Date trigger



Back Adjustment of Continuous Contracts

A continuation chart is constructed from several futures contracts. The prices for different contracts are usually not equal, even on the same day. Therefore, when rolling from one contract to the next, price gaps would appear on the chart on rollover day. When you use technical analysis tools (such as indicators or signals) on a continuation chart, these gaps can hinder the correct interpretation of the price movement. To eliminate the gaps, the prices of all older contracts can be back-adjusted.

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When you use adjusted prices, only the current contract is shown with its real prices. For all older contracts, adjusted (synthetic) prices are used. This means that the prices you can read from the chart for older contracts are not equal to the actual prices of these contracts at the shown date.

Back adjustment of prices is done by calculating a price difference between the old contract and the new contract on rollover day. All older contracts are then adjusted by this difference. Only new data is added to the chart with its actual prices.

You can determine if the historic prices should be adjusted at all, and if yes, by which method (absolute adjustment or percentage adjustment). If the prices should be adjusted, you can choose how the price difference between the old and new contract is calculated. The price difference is always calculated with daily (end of day) prices, even if you use an intraday continuation chart.

Note The adjustment settings are not used for continuation charts with weekly or monthly compression.

To adjust the prices of older contracts to the price of the current contract

- Right-click on the chart and select **Properties**.
- On the left side of the dialog, select the name of the chart pane, the name of the symbol and then **Continuation**. For example: **Pane 1 > FDAX 2009H,CC > Continuation**.
- On the right side of the dialog, choose an option from the **Accumulation** list:

Back adjust	The absolute price difference between the current contract and the previous contract is added to or subtracted from all older contracts.
Percentage adjust	The price difference between the current contract and previous contract is calculated as a percentage. The prices of older contracts are adjusted by this percentage.
No adjustment	The prices of older contracts are not adjusted to the price of the current contract. Gaps may be visible in the chart on rollover.

- Choose a **Pricing** option from the list to determine how the price difference between the current contract and the previous contract will be calculated:

Close old contract, close new contract	The *Close* price of the current contract is compared with the *Close* price of the previous contract on the same day.
Open old contract, open new contract	The *Open* price of the current contract is compared with the *Open* price of the previous contract on the same day.
Close old contract, open new contract	The *Open* price of the current contract is compared with the *Close* price of the previous contract from the previous day.

Sharing and Printing Charts

You can share the charts that you have worked on with other people, or create a printout of your chart documents.

To share a chart, you can either save the chart as a picture file or copy it directly to another program via the Windows clipboard. You can also attach the chart as a picture or as a Professional document to an e-mail: See Sending Workspaces, Virtual Pages or Documents via E-Mail on page 169.

Printing Charts

Like other documents, charts can be printed. In the **Chart Print Setup** dialog, you can choose which part of the chart should be printed, if the data should be printed on one page or multiple pages, how the data should be scaled if printed on multiple pages, etc.

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To print a chart

- On the **File** menu, click **Print**.

> **Note** If you want to see a preview of the chart before printing, choose **File > Print Preview**.

To change the print setup for charts

- On the **File** menu, click **Chart Print Setup**.
- Adapt the default settings to your needs.

Control	Description
Current visible records	Print only the section of the chart that is currently visible on the screen.
All records	Print the whole chart, independent of the data that is visible on the screen.
Per page	The vertical scaling of the time series is determined per page. That means that the vertical scale of each page is related to the maximum and minimum points of the part of the time series that is visible on that page
Entire data series	The vertical scaling of the time series is determined once for the whole time series based on the maximum and minimum points of all loaded data. The vertical scale is the same on each page.
Color settings	Select to choose from different printing color setups: **Full Color** Print the chart in color. **Grayscale** Print the chart data in black and white, with price and time scales in gray color. **Monochrome** Print the whole chart in black and white. **Partial Color** Print the chart data in color, with white background. This setting is also applied when **Use same color settings for "Copy Chart"** and / or **Use same color settings for "E-mail Chart"** are selected.
Use same color settings for "Copy Chart"	Check to also apply printing color settings when copying a chart to another program via the Windows clipboard.
Use same color settings for "E-Mail Chart"	Check to also apply printing color settings when sending a chart by email.
Print on one page	Compress the chart to fit on a single sheet of paper.
Keep display ratio	Print the chart with the same display ratio as it appears on the screen.

To change the page setup

See Printing Documents on page 163.

Saving Charts as Picture Files

In addition to saving a chart as a normal Professional document, you can also save a chart as a picture file. Picture files can be used with many image processing programs.

You can also copy a chart as a picture to the Windows clipboard, and then paste it to other programs.

To save a chart as a picture file

- On the **File** menu, click **Document > Save as Picture File**.
- In the **Save As** dialog, enter a name for the file in the **File name** field.

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- In the **Save as type** field, choose the picture file format that you want to use: BMP, JPEG, GIF, TIFF or PNG.
- Choose the location where you want to save the picture file. Professional will suggest to save it to your **Documents** folder. You can also use a different location.
- Click **Save**.

Note The TeleTrader logo is added as a watermark to the chart picture.

To copy a chart to other applications as a picture

- Right-click on the chart and select **Copy Chart**. The chart is copied to the Windows clipboard.
- Paste the chart into another application, for example a desktop publishing program or a image processing program.

Note The TeleTrader logo is added as a watermark to the chart picture.

To save a chart as a Professional document

See Creating and Saving Documents on page 159.

Using Charts Offline

If you want to work with some symbols in a chart without a permanent Internet connection, you can export the time series that you need to the local database of TeleTrader Professional. You can work with all symbols that are available in your local database even if you do not have a live connection to the Internet. To do this, you have to switch to offline mode before disconnecting from the Internet.

You can also export the time series of a symbol to a text file. The exported data includes the date/time, *Open*, *High*, *Low* and *Close* prices, as well as *Volume* and *Open Interest*, if available. To copy time series data to the clipboard instead, see also Copy Data to the Clipboard as Text on page 378.

To export a time series to the local database

- Right-click the time series and choose **Export Security > Export to local database**.
- In the **Export to local data base** dialog, enter a local symbol ID with at most 14 characters into the field **Choose symbol ID**.
- Enter a symbol description (name) with at most 16 characters into the field **Choose description**.
- Choose how many decimals you want to export from the list. If you choose **Auto**, Professional will automatically determine the number of decimals to export based on the symbol data.
- Click **Export** and wait for the export to finish. You can see the progress in the blue progress bar.
- Click **Finish**. You can now find the exported symbol with Symbol Search under the ID and name that you have chosen for it. The symbol is automatically added to the exchange **<Local>**.

Note You cannot export a time series to the local database if you are using a tick by tick or tickbar compression. You can however export tick data to a text file.

To switch to offline mode

- On the **Tools** menu, choose **Options**.
- On the left side of the dialog, select **General**.

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- On the right side of the dialog, clear the checkbox **Use this data feed on next login**.
- Click **OK**. If you want to switch to offline mode immediately, close TeleTrader Professional now.
- On the next start of TeleTrader Professional, you will see the dialog **More than one data feed available**.
- Select **Work Offline** and click **OK**.
- You can now only work with the symbols that you have exported to your local database. To find them, use Symbol Search.

Note To switch back to the online mode, close Professional. On the next start, select **TeleTrader MDS** in the dialog **More than one data feed available**. If you want to keep using the online mode, also check the option **Use this data feed on next login**.

To export a time series to a text file

- Right-click the time series and choose **Export Security > Export to text document**.
- In the **Save as** dialog, enter a name for the document in the **File name** field.
- Choose the location where you want to save your document. Professional will suggest to save it into your **Documents** folder. You can also use a different location.
- Click **Save**. A message will inform you once the security data has been successfully exported.

Note The export of tick and intraday data is limited to a maximum of seven days of data. For tick data, there is an additional limit of 10,000 records. For fast-ticking symbols, one whole day of tick data can be exported, even when the number of ticks exceeds the limit. When the export limit is reached, only the newest records up to the limit are exported and you will be notified by a system message.

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Drawing Tools

Drawing tools use graphical techniques, like trend lines, trend channels, support and resistance levels, Fibonacci retracements, Pivot Points and many more, to interpret the price development of a security. You can only use drawing tools in charts.

All drawing tools are available from the **Drawing** toolbar:

With these tools you can add different drawing objects to a chart. You can also customize their appearance, and in some cases the underlying calculation methods (for example for Pivot Points).

If you want to get a notification (sound, message or e-mail) when the time series or a study cross a drawing object, you can use intersection alerts: See Intersection Alerts on page 326.

Note TeleTrader Software GmbH wants to point out explicitly that all examples in this manual were made up in retrospect and show an idealized situation. Interpretations of drawing tools are intended as a thought-provoking impulse and should in no way be understood as a recommendation to buy or sell a security.

Adding Drawing Objects to a Chart

To add drawing objects to a chart, you have to use drawing tools. All drawing tools are available from the **Drawing** toolbar and from the **Insert** menu. Just click on the corresponding icon of the drawing tool to make it active:

	Free Line
	Trend Channel
	Linked Parallel Lines
	Horizontal Line
	Regression Line
	Regression Channel
	Rectangle
	Ellipse
	Fibonacci Fan
	Fibonacci Trend Line
	Fibonacci Retracements
	Fibonacci Expansions
	Fibonacci Arc
	Speed Resistance Line
	Gann Square

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	Gann Fan
	Andrews Pitchfork
	Wave and Harmonics
	Pivot Points
	Text
	Vertical Lines
	Fibonacci Vertical Lines
	Cycle Lines
	Price Change
	Arrow Up
	Arrow Down

As long as a tool is active, you can use it to draw the object on the chart. For most drawing tools, you have to define one or more reference points that indicate where the drawing object should be placed on the chart. You can later move these reference points by dragging them with the mouse.

After you have inserted a drawing object, it will usually also stay visible if you change the data compression of the chart (for example switching from a daily to an intraday chart). See Hiding Drawing Objects on page 294 for details.

Keyboard positioning of reference points

In addition to using the mouse to position a reference point, you can also use the keyboard for a more precise positioning:

- Click on the icon of the drawing tool on the **Drawing** toolbar.
- Move the mouse pointer near the position on the chart where you want to enter the reference point.
- Use the following keyboard commands to set the reference point at a precise price:

O	*Open* price of this bar / column
H	*High* price of this bar / column
L	*Low* price of this bar / column
C	*Close* price of this bar / column

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Note When you are drawing on a chart with overlaid symbols (see Inserting, Overlaying and Changing Symbols in a Chart on page 187), and the bars overlap, the reference point is always positioned at the highest / lowest or first / last of the available prices.

Keep drawing tools active

After you have finished drawing, the drawing tool will become inactive again by default. If you want to keep the tool active for a longer time, for example to draw several trend lines after each other, you can activate a setting under **Tools > Options > Chart** that will keep the tool active until you press the ESC key or select another drawing tool. See Chart Settings on page 340.

Snapping to the Nearest Price with the Magnet

When you add a drawing object to the chart by setting its reference points, you can use the **Snap** tool (**Magnet**) to automatically position the reference point at the nearest price of a bar / data point. This means that when you activate the **Snap** tool, the reference points are automatically pulled to the nearest price. You can choose the strength of the "magnet".

Note The **Snap** tool can be used in combination with all drawing tools except shapes, text, arrows, Pivot Points and vertical / cycle lines. The tool **Wave and Harmonics** snaps automatically to the most logical prices.

To activate the Snap tool

- Click on the **Snap** icon on the **Drawing** toolbar:
- The **Snap** tool will stay active until you click on the **Snap** icon again.

Note If you only want to use the **Snap** tool temporarily, hold the CTRL key while drawing on the chart.

To set the strength of the Snap tool

- Click on the arrow next to the **Snap** icon on the **Drawing** toolbar.
- Select the strength of the magnet from the list that appears. The currently used strength is highlighted with a check mark.
- Select **Custom** to manually enter the strength of the magnet in the **Snap Percentage** dialog.

To use the Snap tool with the Select and Crosshair tool

You can also use the Snap tool in combination with the **Select** and **Crosshair** tool. The crosshair will snap to the nearest price automatically. Activate this feature under **Tools > Options > Chart**: See Chart Settings on page 340 for details.

Lines and Trend Channels

The line drawing tools can be used to draw trend lines, other (free) lines, trend channels or horizontal lines. Trend lines, trend channels and horizontal lines are all used as support or resistance lines.

To draw a *trend line*, you need two reference points (A and B). The reference points are positioned at pivots, for example at two highs (uptrend) or two lows (downtrend).

To draw a *trend channel*, you need a third reference point (C) that defines the distance of the second line from the first trend line. A trend channel essentially consists of two parallel trend lines that surround the trending time series.

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You can convert a trend line to a trend channel by setting the third reference point, and add action / reaction lines above or below the channel.

To draw a *horizontal line*, you only need one reference point that is positioned at the price level where you want the line to appear.

Free lines can be used for example to highlight significant chart formations that signify a trend reversal or continuation of the trend.

- You can change the color and style of the line(s), show the prices at the reference points or position horizontal lines at a specific level: See Customizing Lines and Trend Channels on page 274.

To draw a trend line or free line

- Click on the **Free Line** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point of your line (A) and hold the mouse button down. To draw the line at an exact angle of 45°, 90°, 180° etc., press and hold the SHIFT key while drawing.
- Move the mouse pointer to the second reference point of your line (B) and release the mouse button.

Note While you are drawing the line, you can move the whole line vertically without changing its direction: Press the ALT key after defining the second reference point of your line and keep holding the mouse button, then move the line to its final position.

To draw a trend channel

- Click on the arrow next to the **Free Line** icon on the **Drawing** toolbar, and then click on the **Trend Channel** icon:
- Click on the chart at the first reference point of your line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your line (B) and release the mouse button.
- Move the mouse pointer away from the trend line and click on the third reference point (C) at the distance where you want to position the second line of the trend channel.

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To draw a horizontal line (support / resistance line)

- Click on the arrow next to the **Free Line** icon on the **Drawing** toolbar, and then click on the **Horizontal Line** icon: —
- Click on the chart at the level where you want the horizontal line to appear.

To change the breadth of a trend channel

- Click on the trend channel to select it.
- Click on any reference point and hold the mouse button down.
- Press and hold the ALT key.
- Drag the reference point upwards or downwards to change the breadth of the channel.
- Release the mouse button to fix the new breadth. The direction of the channel will not be changed.

Note You can also change the breadth of a trend channel with action / reaction lines (see below). The distance of all other lines is then automatically adjusted to the new breadth.

To convert a trend line to a trend channel

- Click on the trend line to select it.
- Click on the visibility point of the line and hold the mouse button down.
- Drag the visibility point upwards or downwards until a white preview line appears above or below the trend line.
- Release the mouse button to drop the line and create the trend channel.

Note You can remove the second line to convert the trend channel back to a trend line by double-clicking the visibility point of either line. This only works as long as you have not added any action / reaction lines (see below).

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Action / reaction lines

When you have drawn a trend channel, you can add action / reaction lines above or below the channel as additional support / resistance levels. These lines are drawn parallel to the trend channel at an equal distance.

Action / reaction lines have been introduced by Roger Babson in the early 90s. At the heart of the method is Newton's physical sciences law that every action has an equal and opposite reaction. In its simplest form, the action / reaction method shows a trader when and where to add on positions if a market is in a strong trend.

To draw action / reaction lines

- Click on the trend channel to select it.
- Click on any visibility point of the channel and hold the mouse button down.
- Drag the visibility point upwards or downwards until a white preview line appears on the above or below the channel.
- You can drag the visibility point further to create more action / reaction lines.
- Release the mouse button to add the action / reaction lines to the chart.

Note To remove (hide) action / reaction lines again, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

Linked Parallel Lines

The new **Linked Parallel Lines** drawing tool is very similar tool to **Trand Channel**. It allows you to draw multiple parallel lines, but at customizable distances relative to the main line.

Linked Parallel Lines are drawn like normal trend line by connecting two spots (A and B). Then, you need to click on the third point (C) to draw linked parallel line. You can add more parallel lines at a customized distance relative to the main line.

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You can show / hide labels and prices and change the color and style of the Linked Parallel Lines: See Customizing Linked Parallel Lines on page 274.

To draw Linked Parallel Lines

- Click on the **Linked Parallel Lines** icon on the **Drawing toolbar**:
- Click on the chart at the first reference point (A - starting point) of the line and hold the mouse button down.
- Move the mouse pointer to the second reference point of the line (B - end point) and release the mouse button.
- Move the mouse pointer away from the main line and click on the third reference point (C – parallel line) at the distance where you want to position the parallel line.

You can extend the Linked Parallel Lines to to the left / right by using extension points: See Extending and Shortening Lines with Extension Points on page 271.

To draw additional channel lines

- Click on the **Linked Parallel Lines** to select it.
- Click on any visibility point of the lines and hold the mouse button down.
- Drag the visibility point upwards or downwards until white preview lines appear above and below the line.
- Release the mouse button to add the additional line to the chart.

Note To remove (hide) additional parallel lines again, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

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Regression Lines and Regression Channels

Regression lines and channels are based on the best fit of all prices between a starting point and an end point. The best fit is determined by calculating the least amount of space between the price points and the linear regression line, using the method of least squares. The regression line thus represents the median line of the changing price. It can be considered as an equilibrium price line – any deflection up or down indicates super-activity of buyers or sellers.

To draw a *regression line*, you need two reference points (A and B). The reference points define the period of time for which the linear regression trend is shown on the chart.

The *regression channel* lines are automatically added at a distance of one standard deviation above and below the regression line. The channel borders serve as support / resistance lines. You can add more channel lines at a distance of two, three or more standard deviations from the regression line above and below the channel.

You can change the color and style of the regression line or channel: SeeCustomizing Regression Lines and Regression Channels on page 275.

To draw a regression line

- Click on the **Regression Line** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point of your line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your line (B) and release the mouse button.

To draw a regression channel

- Click on the arrow next to the **Regression Line** icon on the **Drawing** toolbar, and then click on the **Regression Channel** icon:
- Click on the chart at the first reference point of your line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your line (B) and release the mouse button.

To draw additional channel lines

- Click on the regression channel to select it.
- Click on any visibility point of the channel and hold the mouse button down.
- Drag the visibility point upwards or downwards until white preview lines appear above and below the channel.

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- You can drag the visibility point further to create more channel lines at a distance of two, three or more standard deviations from the regression line.
- Release the mouse button to add the additional lines to the chart.

Note To remove (hide) additional lines again, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

Shapes

TeleTrader Professional provides you with two shape tools to mark significant areas on a chart: The rectangle and the ellipse tool. Both tools show transparent shapes on the chart.

You can change the colors, borders and transparency settings for a shape object: See Customizing Shapes on page 275. Shapes are automatically drawn behind other chart objects (in the background of the chart). See also Moving and Copying Drawing Objects on page 273.

To draw a rectangle

- Click on the **Rectangle** icon on the **Drawing** toolbar:
- Click on the chart at the top-left corner of your rectangle and hold the mouse button down.
- Move the mouse pointer to the bottom-right corner of your rectangle and release the mouse button.

To draw an ellipse

- Click on the **Ellipse** icon on the **Drawing** toolbar:
- Click on the chart at the midpoint of your ellipse and hold the mouse button down.
- Move the mouse pointer to choose the size of your ellipse and release the mouse button.

Fibonacci Fans

The Fibonacci Fan starts with a trend line (base line) and creates support / resistance lines at the so-called Fibonacci levels of 38,2%, 50% and 61,8%.

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To draw a Fibonacci Fan, you need two reference points (A and B) that define the base line. Both reference points are positioned at recent consecutive pivots (for example, a high and the following low). The vertical distance between the two reference points (shown as the auxiliary blue dotted line on the picture below) is divided into the Fibonacci levels. The fan lines are drawn from point A through the Fibonacci levels.

All Fibonacci drawing tools are based on the belief that the price development of securities is related to the numbers of the Fibonacci sequence, a mathematical series of numbers that was discovered in the twelfth century, and the so-called Fibonacci levels, which are derived from the ratios of consecutive Fibonacci numbers. Fibonacci numbers and Fibonacci ratios also appear in nature, for example in the arrangement of leaves in a sunflower, and in the golden ratio, which is used for example in architecture and paintings.

The base line (reference line) of the fan is hidden by default, but you can also display it on the chart. Additionally, you can choose which levels of the fan are displayed, customize the ratios used to calculate the levels, change the line style for the fan lines, and show / hide the labels for each level: See Customizing Fibonacci Fans on page 276.

To draw a Fibonacci Fan

- Click on the **Fibonacci Fan** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point of your base line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your base line (B) and release the mouse button.

You can extend the fan lines to the right by using extension points: See Extending and Shortening Lines with Extension Points on page 271. To hide some of the lines, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

Fibonacci Trend Line

Fibonacci Trend Lines start with a trend line (base line, 0% line). The two reference points (A and B) are positioned at pivots, for example at two highs (uptrend) or two lows (downtrend). Then, you need a third reference point (C) that defines the distance from the first trend line to the second line (100% line). The trend channel is divided into the so-called Fibonacci levels. The channel (border) lines are forming the 0% and 100% lines of a diagonal Fibonacci channel. The parallel 38,2%, 50% and 61,8% lines will be added automatically in between the border lines.

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All Fibonacci drawing tools are based on the belief that the price development of securities is related to the numbers of the Fibonacci sequence, a mathematical series of numbers that was discovered in the twelfth century, and the so-called Fibonacci levels, which are derived from the ratios of consecutive Fibonacci numbers. Fibonacci numbers and Fibonacci ratios also appear in nature, for example in the arrangement of leaves in a sunflower, and in the golden ratio, which is used for example in architecture and paintings.

The connecting line between the first and third reference point is hidden per default, but you can choose to display it on the chart. You can also use a color gradient across all or selected Fibonacci levels. Additionally, you can choose which levels are displayed, customize the ratios used to calculate the levels, change the line style for the level lines, and show / hide the labels for each level: See Customizing Fibonacci Trend Line on page 277. Fibonacci Trend Lines are automatically drawn behind other chart objects (in the background of the chart). See also Moving and Copying Drawing Objects on page 273.

To draw Fibonacci Trend Line

- Click on the **Fibonacci Trend Line** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point of your line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your line (B) and release the mouse button.
- Move the mouse pointer away from the trend line and click on the third reference point (C) at the distance where you want to position the second line (100% line).

You can extend the Fibonacci levels to the right by using extension points: See Extending and Shortening Lines with Extension Points on page 271. To hide some of the levels, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

Fibonacci Retracements and Expansions

Fibonacci Retracements and Expansions both start with a trend line (base line) and divide it into the so-called Fibonacci levels.

When using *Fibonacci Retracements*, the horizontal lines at those levels are believed to provide support / resistance when the price moves into the opposite direction of the current trend (retracements). To draw Fibonacci Retracements, you need two reference points (A and B) that define the base line. Both reference points are positioned at recent consecutive pivots (for example, a high and the following low). The vertical distance between the two reference points is divided into the Fibonacci levels.

When using *Fibonacci Expansions*, the horizontal lines at those levels are believed to provide support / resistance when the price starts to move into the opposite direction of the current trend, but later reverses into the original

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direction. Fibonacci Expansions therefore need a third reference point (C) in addition to the two reference points of Fibonacci Retracements. This reference point is positioned at a potential pivot. You can convert Fibonacci Retracements to Fibonacci Expansions, and vice versa, by setting the third reference point.

All Fibonacci drawing tools are based on the belief that the price development of securities is related to the numbers of the Fibonacci sequence, a mathematical series of numbers that was discovered in the twelfth century, and the so-called Fibonacci levels, which are derived from the ratios of consecutive Fibonacci numbers. Fibonacci numbers and Fibonacci ratios also appear in nature, for example in the arrangement of leaves in a sunflower, and in the golden ratio, which is used for example in architecture and paintings.

The base line (reference line) is hidden per default, but you can choose to display it on the chart. You can also use a color gradient across all or selected Fibonacci levels. Additionally, you can choose which levels are displayed, customize the ratios used to calculate the levels, change the line style for the level lines, and show / hide the labels and prices for each level: SeeCustomizing Fibonacci Retracements and Expansions on page 279. Fibonacci Retracements and Expansions are automatically drawn behind other chart objects (in the background of the chart). See also Moving and Copying Drawing Objects on page 273.

To draw Fibonacci Retracements

- Click on the **Fibonacci Retracements** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point of your base line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your base line (B) and release the mouse button.

To draw Fibonacci Expansions

- Click on the arrow next to the **Fibonacci Retracements** icon on the **Drawing** toolbar, and then click on the **Fibonacci Expansions** icon:
- Click on the chart at the first reference point of your base line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your base line (B) and release the mouse button.
- Click on the third reference point (C).

To convert Fibonacci Retracements to Fibonacci Expansions

- Click on the drawing object to select it.
- Click on the third reference point that is positioned to the right of the second reference point and drag it to the next pivot.

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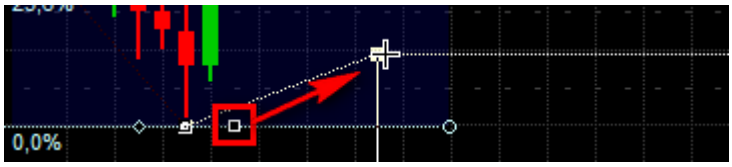
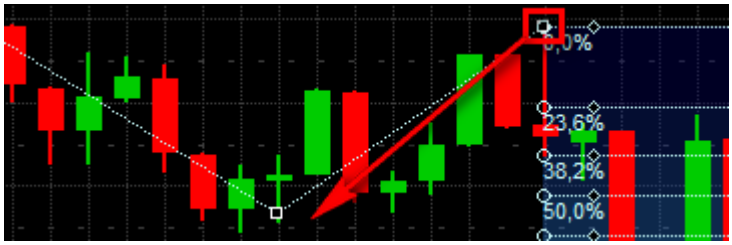


- The Fibonacci Retracements are automatically converted to Fibonacci Expansions.

To convert Fibonacci Expansions to Fibonacci Retracements

- Click on the drawing object to select it.
- Click on the third reference point and drag it near the second reference point.



- The Fibonacci Expansions are automatically converted to Fibonacci Retracements.

You can extend the Fibonacci levels to the right by using extension points: See Extending and Shortening Lines with Extension Points on page 271. To hide some of the levels, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

Fibonacci Arcs

With Fibonacci Arcs, you can try to identify support and resistance levels at the so-called Fibonacci levels of 38,2%, 50% and 61,8%. The arc lines can be shown as a half circle or full circle.

To draw Fibonacci Arcs, you need two reference points (A and B) that define the base line. Both reference points are positioned at recent consecutive pivots (for example, a high and the following low). The vertical distance between the two reference points (shown as an auxiliary blue dotted line on the picture below) is divided into the Fibonacci levels. The arc lines are then drawn from point B with the radii of the resulting distances.

All Fibonacci drawing tools are based on the belief that the price development of securities is related to the numbers of the Fibonacci sequence, a mathematical series of numbers that was discovered in the twelfth century, and the so-

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called Fibonacci levels, which are derived from the ratios of consecutive Fibonacci numbers. Fibonacci numbers and Fibonacci ratios also appear in nature, for example in the arrangement of leaves in a sunflower, and in the golden ratio, which is used for example in architecture and paintings.

You can show the arc lines as a full circle rather than as a half circle. Additionally, you can choose which levels are displayed, customize the ratios used to calculate the levels, change the line style for the arc lines, and show / hide the labels for each level: See Customizing Fibonacci Arcs on page 281.

To draw Fibonacci Arcs

- Click on the **Fibonacci Arc** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point of your base line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your base line (B) and release the mouse button.

You can hide some of the arc lines: See Hiding and Showing Lines / Levels with Visibility Points on page 296.

Speed Resistance Lines

Speed Resistance Lines divide a trend into thirds, and create support / resistance lines for the following price movements.

You need two reference points (A and B) to draw the base line. Both reference points are positioned at recent consecutive pivots (for example, a high and the following low). The vertical distance between the two reference points (shown as an auxiliary blue dotted line on the picture below) is divided into thirds. Two additional lines are drawn from point A through the 1/3 level and the 2/3 level.

You can change the color and style of the Speed Resistance Lines: See Customizing Speed Resistance Lines on page 283.

To draw Speed Resistance Lines

- Click on the **Speed Resistance Line** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point of your base line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your base line (B) and release the mouse button.

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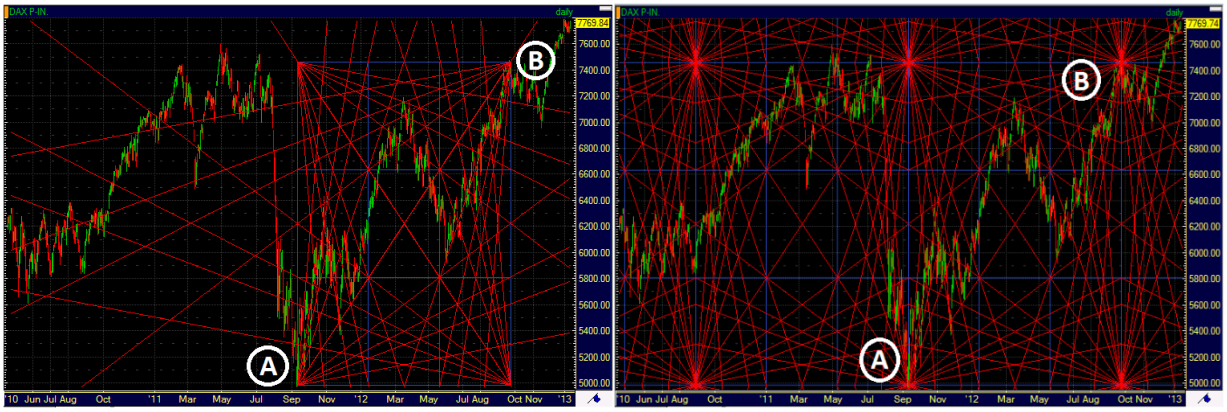
You can extend the Speed Resistance Lines to the right by using extension points: See Extending and Shortening Lines with Extension Points on page 271. To hide some of the lines, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

Gann Square

The Gann Square drawing tool can be used for forecasting future support or resistance levels by combining time and price by counting forward from important highs and lows. The starting point is generally an important High or Low on the chart. The start and end points will be the diagonal corners of the square. The end reference point is often the last bar on the chart.

Gann Square is available in two modes: Single square mode and Multi square mode.

- In Single square mode, only one Gann Square is plotted on the chart with four Gann Fans
- in Multi square mode (used as default settings), there is endless number of squares.



Gann Square paramenters:

Price unit: used for defining square height

Time unit: used for defining square width

There are two ways of drawing a Gann Square on the chart: One-click option and Click-hold-release option.

To draw a Gann Square using One-click option

- Click on the **Gann Square** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point (A) to define lower left corner of a square

To draw a Gann Square using Click-hold-release option

- Click on the **Gann Square** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point (A) and hold the mouse button down to define the two diagonal corners.
- Move the mouse pointer to the second reference point (B) and release the mouse button.

To resize and reshape existing Gann Square:

- Click on any corner of the square on the chart and all four initial reference points will become white colored
- Click on one of them, hold the mouse button down, and readjust square size/shape

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Note You can also change size/shape of a Gann Square by manually adjusting Price and Time units on **Properties** sheet in **Chart Properties** dialog. See Customizing Gann Square on page 283.

Gann Fans

The Gann Fan uses lines that are drawn at specific geometric angels, starting from a significant high or low. The geometric angles signify the relationship between price moves over time. For example, the base line (1x1 line) is drawn so that the price moves one unit for every time unit. You can choose the size of the price and time units when drawing the Gann Fan. All fan lines serve as support / resistance lines. If a line is broken, it is believed that the price will move further towards the next fan line.

For drawing the fan, you need two reference points. The first reference point (A) sets the beginning of all Gann Fan lines. The second reference point (B) defines the base line (1x1 line), and therefore also defines the size of the basic price and time unit. You can for example draw the base line so that every five days (time unit), the price would have to move 10 points (price unit) to follow the line. If the price and time unit have the same size on the chart, the base line is drawn at an angle of 45°.

The other fan lines are added automatically. Three lines below the base line: 1x2 line (63,43°), 1x4 line (75,96°) and 1x8 line (82,87°); and three lines above the base line: 2x1 line (26,57°), 4x1 line (14,04°) and 8x1 line (7,13°). The angles of the lines are adjusted relative to the position of the base line or 1x1 line (45°). These lines show for example a move in every time unit of two price units (1x2 line), or a move in every four time units of one price unit (4x1 line).

You can change the color and style of all fan lines: See Customizing Gann Fans on page 285.

To draw a Gann Fan

- Click on the **Gann Fan** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point of your base line (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point of your base line (B) and release the mouse button.

You can extend the lines of the fan to the right by using extension points: See Extending and Shortening Lines with Extension Points on page 271. To hide some of the fan lines, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

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Pivot Points

Pivot Points were originally developed and used by floor traders in order to define support and resistance levels based on the prices of the preceding time period.

The levels are usually calculated by using the High, Low and Close price of the preceding time period. The middle line (Pivot Point) is calculated by summing up these there values and dividing them by three. The other levels are calculated based on the Pivot Point. Other methods for calculation besides the Classic Pivot Points include Floor Pivot Points, Fibonacci Pivot Points etc.

Pivot Points do not need or have any reference points. They are drawn on the chart according to the chosen settings:

- *Basis Date*: The date that is used to define the first day of the calculation period. The Pivot Points object will be inserted on the chart starting with this date.
- *Starting Time*: The starting time for the calculation period. This is especially important for intraday (hourly) Pivot Points.
- *Calculation Period*: The time period that is used to retrieve the base values for the calculations. This can be set in hours, days, weeks or months. The Pivot Points are automatically moved to the start of next time period when one period ends. If you use 1-hour Pivot Points for example, they will be recalculated every hour.

You can also move a Pivot Points object on the chart by dragging it with the mouse. The basis date and starting time will then be adjusted accordingly.

You can change the calculation period and calculation method for the Pivot Points on its property sheet. In addition, you can choose which support / resistance levels are displayed, change the line style for the level lines, extend the lines to the right border of the chart and show / hide the labels and prices for each level. You can also use colored zones for each Pivot Points level. See Customizing Pivot Points on page 285. Pivot Points are automatically drawn behind other chart objects (in the background of the chart). See also Moving and Copying Drawing Objects on page 273.

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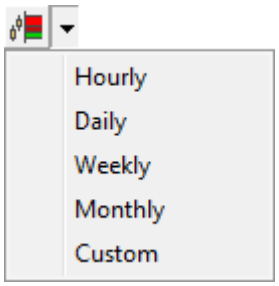
To insert predefined Pivot Points

- Click on the arrow next to the **Pivot Points** icon on the **Drawing** toolbar:



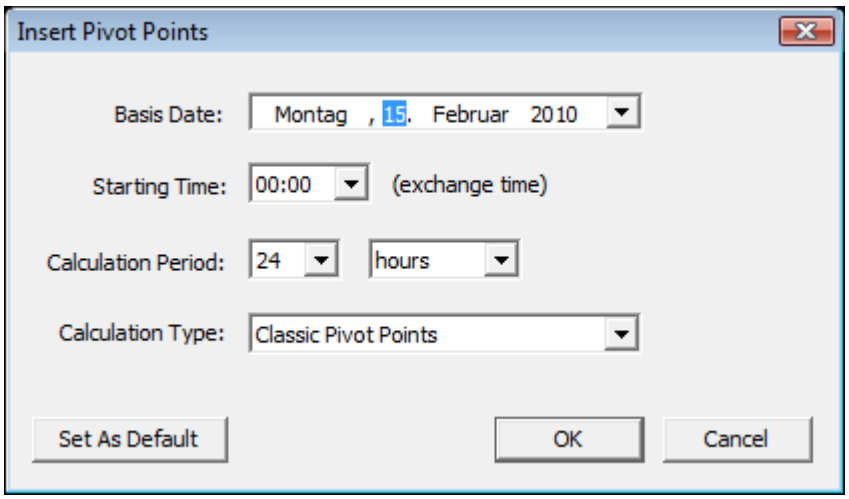
- Choose a calculation period for the Pivot Points:

Hourly	Sets the calculation period to 4 hours
Daily	Sets the calculation period to 1 day
Weekly	Sets the calculation period to 1 week
Monthly	Sets the calculation period to 1 month
Custom	Opens the **Insert Pivot Points** dialog and lets you define custom settings

- The Pivot Points are drawn with the chosen calculation period. The basis date and starting time of the current period are determined automatically. The Pivot Points are calculated with the classic method.

To insert custom Pivot Points

- Click on the **Pivot Points** icon on the **Drawing** toolbar:
- In the **Insert Pivot Points** dialog, choose the **Basis Date** and **Starting Time** for the calculation.



- Choose the **Calculation Period**.
- Choose the **Calculation Type**.
- Click **OK**.

You can hide some of the Pivot Point levels, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

Different Calculation Types

TeleTrader Professional offers the following calculation types for Pivot Points:

Classic Pivot Points	**Resistance3** =	High + 2 x (Pivot - Low)

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	Resistance2 =	Pivot - Support1 + Resistance1
	Middle4 =	(Resistance1 + Resistance2) / 2
	Resistance1 =	2 x Pivot - Low
	Middle3 =	(Pivot + Resistance1) / 2
	Pivot Point =	**(High + Low + Close) / 3**
	Middle2 =	(Support1 + Pivot) / 2
	Support1 =	2 x Pivot - High
	Middle1 =	(Support1 + Support2) / 2
	Support2 =	Pivot - Resistance1 + Support1
	Support3 =	Low - 2 x (High - Pivot)
Floor Pivot Points	**Resistance3** =	High + 2 x (Pivot - Low)
	Resistance2 =	Pivot + High - Low
	Resistance1 =	2 x Pivot - Low
	Pivot Point =	**(High + Low + Close) / 3**
	Support1 =	2 x Pivot - High
	Support2 =	Pivot - High + Low
	Support3 =	Low - 2 x (High - Pivot)
Woodie's Pivot Points	**Resistance2** =	Pivot + High - Low
	Resistance1 =	2 x Pivot - Low
	Pivot Point =	**(High + Low + 2 x Close) / 4**
	Support1 =	2 x Pivot - High
	Support2 =	Pivot - High + Low
Camarilla Pivot Points	**Resistance4** =	(High - Low) x 1,1 / 2 + Close
	Resistance3 =	(High - Low) x 1,1 / 4 + Close
	Resistance2 =	(High - Low) x 1,1 / 6 + Close
	Resistance1 =	(High - Low) x 1,1 / 12 + Close
	Support1 =	Close - (High - Low) x 1,1 / 12
	Support2 =	Close - (High - Low) x 1,1 / 6
	Support3 =	Close - (High - Low) x 1,1 / 4
	Support4 =	Close - (High - Low) x 1,1 / 2
Fibonacci Pivot Points	**Resistance4** =	Pivot + 1,000 x (High - Low)
	Resistance3 =	Pivot + 0,764 x (High - Low)
	Resistance2 =	Pivot + 0,618 x (High - Low)
	Resistance1 =	Pivot + 0,382 x (High - Low)
	Pivot Point =	**(High + Low + Close) / 3**
	Support1 =	Pivot - 0,382 x (High - Low)
	Support2 =	Pivot - 0,618 x (High - Low)
	Support3 =	Pivot - 0,764 x (High - Low)
	Support4 =	Pivot - 1,000 x (High - Low)

Andrews Pitchfork

The Andrews Pitchfork (also called Median Lines) can be used to draw a channel of support and resistance lines, along with a middle line. You can also add warning lines above or below the pitchfork.

The pitchfork needs three reference points that are drawn from a sequence of three consecutive pivots (for example, Low – High – Low, or High – Low – High). The first reference point (A) is set at the latest pivot, the second reference point (B) at the preceding pivot, and the third reference point (C) at the pivot before that. Thus, you draw the pitchfork starting from the present and going into the past.

The two most recent reference points (A and B) are then connected with a line, and the median line of the pitchfork is drawn from the reference point C to the midpoint of this line, dividing it into two equal parts. Two more lines are then

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added, starting from points A and B and running parallel to the median line. Those lines are believed to act as support and resistance for the following price movements.

The reference line (between points A and B) is not shown on the chart by default. You can display it, and also change the color and style of all lines: See Customizing Andrews Pitchfork on page 288.

To draw an Andrews Pitchfork

- Click on the **Andrews Pitchfork** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point (A).
- Click on the chart at the second reference point (B).
- Click on the chart at the third reference point (C).

You can extend the lines of the pitchfork to the right or left by using extension points: See Extending and Shortening Lines with Extension Points on page 271.

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Warning lines

As additional support / resistance levels, you can add warning lines above or below the pitchfork. These lines are drawn parallel to the pitchfork lines at an equal distance.

To draw warning lines

- Click on the pitchfork to select it.
- Click on any visibility point of the pitchfork and hold the mouse button down.
- Drag the visibility point upwards or downwards until a white preview line appears above or below the pitchfork.
- You can drag the visibility point further to create more warning lines.
- Release the mouse button to add the warning lines to the pitchfork.

Note To remove (hide) warning lines again, see Hiding and Showing Lines / Levels with Visibility Points on page 296.

Wave and Harmonics

The Wave and Harmonics drawing tool can be used to visualize (Elliott) waves in trends and corrections, count and plot turning points of those waves and display various related data, such as:

- Number of bars between two turning points
- Amount of time between two turning points
- Absolute change or percentage change between two turning points
- Percentage retracement of a correction in relation to the preceding wave

In addition, the last possible Gartley Pattern and other Harmonics can be shown for the most recent reference points of the wave. The Gartley Pattern was introduced by H.M.Gartley in his book *Profits in the Stock Market* and measures Fibonacci relations between five turning points of a wave.

The reference points of a wave are positioned at alternating pivots (High – Low – High – …). A new High must always be drawn higher than the last Low, a new Low must be drawn lower than the last High. You can draw any number of reference (turning) points for a wave. When drawing Harmonics or a Gartley Pattern, you must define at least five turning points. As the price develops on the chart, you can manually add reference points to the wave.

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The first reference point is labeled with 0 by default, all following reference points are either labeled numerically (1, 2, 3…) or alphabetically (A, B, C…). The usual convention is to label long-term trends with numbers and short-term corrections with characters. You can easily switch between numerical and alphabetical labeling while drawing.

You can change the color and style of all lines, adapt the labeling of turning points (including the start value) and display of relative values, and show / hide the Harmonics for the last five reference points of a wave: See Customizing Wave and Harmonics on page 288.

To draw waves

- Click on the **Wave and Harmonics** icon on the **Drawing** toolbar:
- Click on the chart at the starting point of the wave (zero point).
- Click on the chart to add reference points (turning points).

> **Note** The reference points will automatically snap to the nearest adequate price on the chart (Low when drawing a low pivot, High when drawing a high pivot). To deactivate snapping temporarily, hold the CTRL key while drawing. See also Snapping to the Nearest Price with the Magnet on page 246.

- To switch between numeric and alphabetic labeling, press the SHIFT key. The automatic counting will be reset to zero automatically on every switch. To restart the counting at zero manually, press the 0 key.
- Press the ESC or ENTER key to finish drawing.

To draw Harmonics

- Draw a wave with at least five turning points (as described above).
- By default, the possible Harmonic Pattern and its relative values should now be shown automatically.

If the Harmonic Pattern is not visible on the chart:

- Right-click on the wave and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Harmonics**. For example: **Wave and Harmonics1 > Harmonics**.
- On the right side of the dialog, select **Show Lines** and / or **Show Fill** to show the Harmonic Pattern with its reference and relation lines.

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To add turning points to a wave

- Click on the drawing object to select it.
- Click on the right-most reference point that is positioned next to the last turning point of the wave and drag it to the next pivot.

- Click on the chart to add more reference points (turning points) if desired.
- Press the ESC or ENTER key to finish drawing.

Note If a Harmonic Pattern is shown on the chart, the pattern will take into account the new turning points and move to the right.

To remove turning points from a wave

- Click on the drawing object to select it.
- Press the BACKSPACE key to remove the last (right-most) turning point of the wave.
- To remove several turning points at once, double-click the first (left-most) reference point that you want to remove. This turning point and all turning points to the right will be deleted.

Note If a Harmonic Pattern is shown on the chart, the pattern will take into account the new turning points and move to the left.

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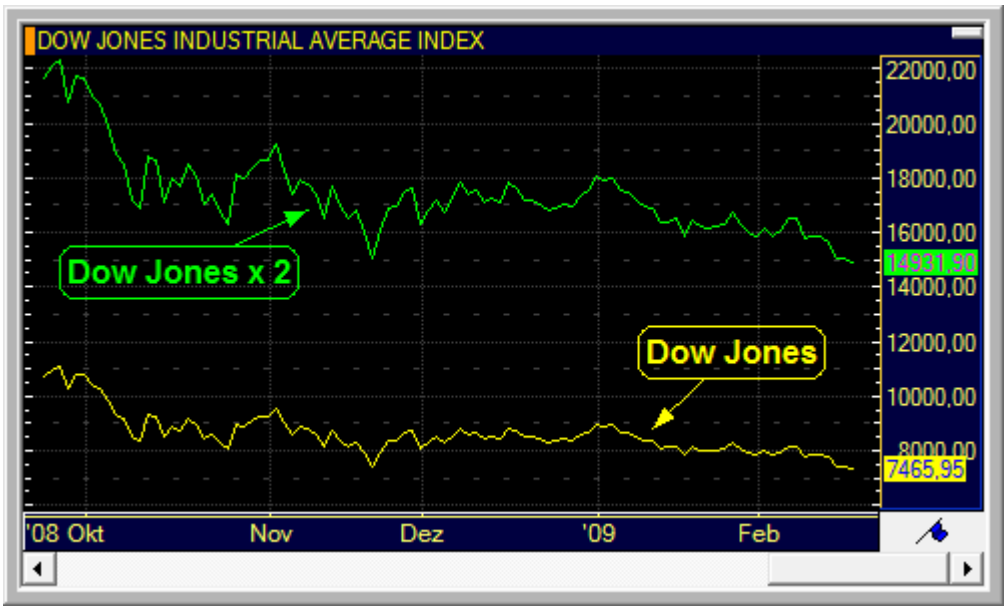
Text

With the Text tool, you can label other objects on the chart, add descriptions etc.



You can also show a rectangle around the text, and add one or more arrows that point from the text to other chart objects. In addition, you can change the font and color of the text: See Customizing Text on page 290.

To add text

- Click on the **Text** icon on the **Drawing** toolbar: ABC
- Click on the chart at the position where you want the text to appear.
- Type your text. Press the ENTER key when you are finished.

> **Note** To insert a line break in the text, use CTRL + ENTER.

To edit inserted text

- Click on the **Select** icon on the **Drawing** toolbar:
- Double-click the text object.
- Edit the text. Press the ENTER key when you are finished.

Vertical, Fibonacci and Cycle Lines

Vertical lines, Fibonacci vertical lines and cycle lines are all used to project a certain base period of time, which is set by you, into the future. By this, you can try to interpret the price development of a symbol based on time intervals, or cycles, to predict when for example the next significant move will take place.

These drawing tools need two reference points to define the first (base) interval. All other intervals are then calculated based on this reference interval.

- With the *vertical lines* tool (shown in red on the picture below), the distance between the reference points A and B is used to plot intervals with equal size as vertical lines on the chart. The lines are drawn all over the chart (to the right and left of the reference interval).

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- With the *Fibonacci vertical lines* tool (shown in blue on the picture below), the distance between the reference points A and B is used to plot intervals that are placed at the numbers of the Fibonacci sequence (1, 1, 2, 3, 5, 8, 13, 21, 34… times the base interval). This means that the first two intervals will have the same size, the third interval will be double size, the fourth interval three times as big, etc. The lines are only drawn to the right of the reference interval.
- With the *cycle lines* tool (shown in green in the picture below), the distance between the reference points A and B is used to plot arcs of equal size on the chart. The arcs are drawn all over the chart (to the right and left of the reference interval).

Vertical lines and Fibonacci vertical lines use either the number of bars inside the reference interval to calculate its size, or the difference between the start date/time and the end date/time. All other intervals are then set accordingly based on the calculated size of the first interval. You can change the calculation method, and also adapt the color and style of the drawn lines: See Customizing Vertical, Fibonacci and Cycle Lines on page 290.

Cycle lines always use the number of bars to determine the size of the reference interval.

To draw vertical lines

- Click on the **Vertical Lines** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point (B) and release the mouse button.

To draw Fibonacci vertical lines

- Click on the arrow next to the **Vertical Lines** icon on the **Drawing** toolbar, and then click on the **Fibonacci Vertical Lines** icon:
- Click on the chart at the first reference point (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point (B) and release the mouse button.

To draw cycle lines

- Click on the arrow next to the **Vertical Lines** icon on the **Drawing** toolbar, and then click on the **Cycle Lines** icon:
- Click on the chart at the first reference point (A) and hold the mouse button down.
- Move the mouse pointer to the second reference point (B) and release the mouse button.

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Price Change

With the price change tool, you can measure the price difference between two points in a chart. The difference can be displayed both as an absolute value or as a percentage.

The price change tool needs two reference points, that will be compared with each other. The start point (A) is used as the reference point or base value, the end point (B) is used as the target point to calculate the difference.

You can choose which of the calculated values are displayed on the chart, move the reference point of the price change object to a selected value, and change the line style of the object: See Customizing Price Change on page 293.

To draw a price change object

- Click on the **Price Change** icon on the **Drawing** toolbar:
- Click on the chart at the first reference point (start point) and hold the mouse button down.
- Move the mouse pointer to the second reference point (end point) and release the mouse button.

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Arrows

With the arrow tools, you can draw two types of arrows on a chart, pointing up or down.

You choose the orientation of the arrow when you draw it. Later, you can change the orientation as well as its colors, borders and transparency: See Customizing Arrows on page 294. Arrows are automatically drawn behind other chart objects (in the background of the chart). See also Moving and Copying Drawing Objects on page 273.

> **Note** The arrows look similar to the markers that are inserted by some studies. See Marker Settings on page 308.

To draw an arrow

- Click on the **Arrow Up** or **Arrow Down** icon on the **Drawing** toolbar: or
- Click on the chart at the position where you want the arrow to appear.

Customizing Drawing Objects

When you add a drawing object to your chart, it is shown with its default settings. All drawing objects can be customized, for example regarding their color and line style, levels that are shown, calculation of the different levels, and so on.

Most settings can be adapted in the **Chart Properties** dialog. Some can also be adapted by clicking or dragging the reference points, extension points and visibility points of the object, or by using specific tools from the **Drawing** toolbar.

Chart Properties dialog

The **Chart Properties** dialog lets you adapt the default settings of a drawing object to your needs. To display the dialog, right-click on the object that you want to customize and select **Properties** to go directly to the property sheet that controls the settings of this particular object. You can also double-click the drawing object to open the properties dialog.

For more information about the **Chart Properties** dialog, see also Customizing the Chart on page 216.

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As an alternative, you can use the **Format Objects** dialog to display and change the properties of a drawing object:

- On the **Format** menu, click **Objects**.

> **Note** You can also click on the **Chart Objects** icon in the **Chart** toolbar:

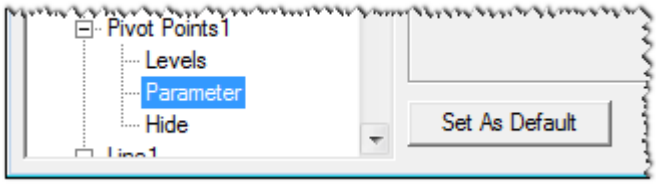
- In the **Format Objects** dialog, choose the object that you want to change.
- Click **Format**. The **Chart Properties** dialog is opened with the correct object already pre-selected.

Using your settings as default settings for this drawing tool

After you have changed the properties of a specific drawing object, you can save these settings. They will then be used for every new object that is created with this drawing tool.

To save your settings as default for this drawing tool

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object.
- On the right side of the dialog, adapt the default settings to your needs.
- Click **Set As Default**.



> **Note** For Pivot Points, you can also save your default settings by clicking on **Set As Default** in the dialog **Insert Pivot Points**.

Extending and Shortening Lines with Extension Points

You can use extension points to change the length of the line(s) of a drawing object. In addition, you can also double-click on the reference points of an object to extend a line to the borders of a chart, or shorten it to the reference point.

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When a drawing object consists of more than one line, any extension point controls the length of all lines at once. For example, when you change the length of one line in a trend channel object, all lines are adjusted to the same length automatically.

Extension points are available for all drawing objects except shapes, arrows, texts, Wave and Harmonics, Fibonacci Arcs, Pivot Points and vertical lines.

Tip To automatically use the new length of the line as a default for every object that will be created with this drawing tool in the future, open the **Chart Properties** dialog and click **Set As Default**.

Extension points

To manually extend / shorten a line with extension points

- Click on the drawing object to select it.
- Click on an extension point and hold the mouse button down.
- Drag the extension point to extend / shorten the line.
- Release the mouse button to set the new line length.

To extend / shorten a line with extension points

- Click on the drawing object to select it.
- Double-click on an extension point.
  - If the line ended at a manually set extension point, it will be extended to the borders of the chart on this side.
  - If the line ended at the borders of the chart, it will either be shortened to the position of the last manually set extension point, or to the position of the reference point on this side.

Reference points

To extend / shorten a line with reference points

- Click on the drawing object to select it.
- Double-click on a reference point.
  - If the line ended at the reference point, it will be extended to the borders of the chart on this side.
  - If the line did not end at the reference point, it will be shortened to the position of the reference point on this side.

Warning For **Wave and Harmonics** objects, double-clicking a reference point will remove all other reference points to the right of it.

Changing the Title, Color and Line Style

You can change the title (name), basic color and line style for all drawing objects in the same way.

Advanced color and style settings are discussed in the respective sections for each drawing object.

To change the title (name) of a drawing object

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, for example **Line 1**.

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- On the right side of the dialog, edit the text in the **Title** field.

> **Note** If you want to return to the previous title of the drawing object, click **Reset**.

To change the color of a drawing object

- Click on the drawing object to select it.
- Click on the **Color** icon on the **Drawing** toolbar and select a new color for the object:

To change the line style of a drawing object

- Click on the drawing object to select it.
- Click on the **Next Line Style** icon on the **Drawing** toolbar to switch to the next line style:

Moving and Copying Drawing Objects

You can change the position of a drawing object in several ways:

- You can move the whole drawing object with drag and drop.
- You can create an exact copy of the drawing object at a new location by holding the CTRL key while moving it.
- You can change the shape of a drawing object by moving its reference points.
- You can move a drawing object to the foreground or to the background of the chart, relative to all other visible chart objects.

To move a drawing object on the chart

- Click on the drawing object to select it.
- Hold the mouse button down and move the drawing object.
- Drag it to its new location and release the mouse button to drop it there.

To copy a drawing object

- Click on the drawing object to select it.
- Press and hold the CTRL key.
- Hold the mouse button down and move the drawing object.
- Drag it to its new location and release the mouse button to drop it there.
- Release the CTRL key.

> **Note** You cannot copy a Pivot Points object.

To move the reference point of a drawing object

- Click on the drawing object to select it.
- Click on the reference point that you want to move and hold the mouse button down.
- Drag the reference point to its new location and release the mouse button to drop it there.

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To move a drawing object to the foreground

- Click on the drawing object to select it.
- Click on the **To Foreground** icon on the **Drawing** toolbar:

> **Note** Because of their filled body, **Shapes**, **Arrows**, **Pivot Points** and **Fibonacci Retracements**, **Expansions** and **Trend Lines** are automatically drawn in the background of the chart. If they are moved to the foreground, the filled area of those drawing objects will never cover the time series or line drawing objects (such as trend lines or fans).

To move a drawing object to the background

- Click on the drawing object to select it.
- Click on the **To Background** icon on the **Drawing** toolbar:

Customizing Lines and Trend Channels

You can change the color and style of a trend line, trend channel or horizontal line, show the prices at the reference points or position horizontal lines at a specific level.

To change the line style of a trend line, trend channel or horizontal line

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Line Style**. For example: **Line 1 > Line Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the line(s)
Style	Line style of all visible lines
Weight	Width of the line(s)

To show the prices at the reference points on the chart

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Parameter**. For example: **Line 1 > Parameter**.
- On the right side of the dialog, select **Show Prices**.

To position a horizontal line at a specific price level

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Parameter**. For example: **Horizontal Line 1 > Parameter**.
- On the right side of the dialog, edit the price level at which the horizontal line is shown in the **Price** field.

Customizing Linked Parallel Lines

You can change the color and style of a Linked Parallel Lines and show the prices and line numbers at the reference points.

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To change the line style of a linked parallel lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Line Style**. For example: **Linked Parallel Lines 1 > Line Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the line(s)
Style	Line style of all visible lines
Weight	Width of the line(s)

To show the prices at the reference points on the chart

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Parameter**. For example: **Linked Parallel Lines 1 > Parameter**.
- On the right side of the dialog, select **Show Prices**.

To show the line number at the reference points on the chart

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Parameter**. For example: **Linked Parallel Lines 1 > Parameter**.
- On the right side of the dialog, select **Show Labels**.

Customizing Regression Lines and Regression Channels

You can change the color and style of a regression line or channel.

To change the line style of a regression line or channel

- Right-click the drawing object and select **Properties**.
- In the **Chart Properties** dialog, click **Line Style**.
- Adapt the following options to your needs:

Line Style	
Line Color	Choose the color of the lines.
Style	Choose the line style.
Weight	Choose the line width.

Customizing Shapes

You can change the colors, borders and transparency settings of a shape object. You can also move a shape object to the background of a chart: See Moving and Copying Drawing Objects on page 273.

To change the colors, borders and transparency settings of a shape object

- Right-click on the drawing object and select **Properties**.

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- On the left side of the dialog, select the name of the drawing object, and then **Line Style**. For example: **Rectangle 1 > Line Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the border lines
Style	Line style of the border lines
Weight	Width of the border lines
Fill Color	Fill color of the body of the shape
Show Line	Check to show the border lines
Show Fill	Check to show the body
Transparency	Transparency of the shaded area in percent (0% = solid)

Customizing Fibonacci Fans

You can choose which levels of the Fibonacci Fan are displayed, customize the ratios used to calculate the levels, change the line style for the fan lines, and show / hide the labels for each level. You can also show the base line (reference line) on the chart, which is hidden by default.

Fibonacci levels and fan lines

To show / hide individual levels of the fan

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Fan 1 > Levels**.
- On the right side of the dialog, select the check boxes next to the levels that should be visible, or clear the check boxes next to the levels that should be hidden.

To show the reference line

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Fan 1 > Levels**.
- On the right side of the dialog, select **Show reference line**.

To use custom levels for the fan lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Fan 1 > Levels**.
- On the right side of the dialog, select **Use custom values**.
- In the **Custom** column of each level, click on the value for this level to edit the value.

To change the line style of the fan lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Fan 1 > Levels**.

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- On the right side of the dialog, adapt the **Line** settings to your needs.

Control	Description
Color	Color of the fan lines
Style	Line style of the fan lines
Weight	Width of the fan lines
Apply to all levels	Check to use the same line style for all levels of the fan. Clear to use individual line styles for each level. You can then click on each level to see / change the line style settings of this level.

Labels for each level

To show the level labels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Fan 1 > Levels**.
- On the right side of the dialog, select **Show levels**.

To change the font of the level labels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Fan 1 > Levels**.
- On the right side of the dialog, adapt the **Font** settings to your needs.

Control	Description
Font	Type of font used for the labels of each level
Bold	Check to use a bold style for the labels
Italic	Check to use an italic style for the labels
Size	Size of the font used for the labels
Apply to all levels	Check to use the same font settings for the labels of all levels of the fan. Clear to use individual font settings for each level. You can then click on each level to see / change the font settings of this level.

Customizing Fibonacci Trend Line

You can choose which Fibonacci levels are displayed, customize the ratios used to calculate the levels, change the line style for the level lines, and show / hide the labels for each level. You can also use a color gradient across all or selected Fibonacci levels. The connecting line between the first and third reference point, which is hidden by default, can be displayed on the chart.

Fibonacci levels and level lines

To show / hide individual levels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Trend Line 1 > Levels**.
- On the right side of the dialog, select the check boxes next to the levels that should be visible, or clear the check boxes next to the levels that should be hidden.

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To show the reference line (connecting line)

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Trend Line 1 > Levels**.
- On the right side of the dialog, select **Show reference line**.

To use custom levels for the Fibonacci Trend Line

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Trend Line 1 > Levels**.
- On the right side of the dialog, select **Use custom values**.
- In the **Custom** column of each level, click on the value for this level to edit the value.

To change the line style of the level lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Trend Line 1 > Levels**.
- On the right side of the dialog, adapt the **Line** settings to your needs.

Control	Description
Color	Color of the level lines
Style	Line style of the level lines
Weight	Width of the level lines
Apply to all levels	Check to use the same line style for all levels. Clear to use individual line styles for each level. You can then click on each level to see / change the line style settings of this level.

Color gradient across levels

To show a color gradient

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Trend Line 1 > Levels**.
- On the right side of the dialog, select **Show color gradient**.

To change the colors and transparency of the gradient

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Trend Line 1 > Levels**.
- On the right side of the dialog, adapt the **Color Gradient** settings to your needs.

Control	Description
Start Color	First color that is used for the gradient
End Color	Second color that is used for the gradient
Start Level	Level at which the gradient starts with the start color

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End Level	Level at which the gradient ends with the end color
Transparency	Transparency of the shaded area in percent (0% = solid)

Labels for each level

To show the level labels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Trend Line 1 > Levels**.
- On the right side of the dialog, select **Show levels**.

To change the font of the level labels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Trend Line 1 > Levels**.
- On the right side of the dialog, adapt the **Font** settings to your needs.

Control	Description
Font	Type of font used for the labels of each level
Bold	Check to use a bold style for the labels
Italic	Check to use an italic style for the labels
Size	Size of the font used for the labels
Apply to all levels	Check to use the same font settings for the labels of all levels. Clear to use individual font settings for each level. You can then click on each level to see / change the font settings of this level.

Customizing Fibonacci Retracements and Expansions

You can choose which Fibonacci levels are displayed, customize the ratios used to calculate the levels, change the line style for the level lines, show / hide the labels and prices for each level, and show the label group number next to each level. You can also use a color gradient across all or selected Fibonacci levels. The base line (reference line), which is hidden by default, can be displayed on the chart. In addition, you can modify how prices should be displayed on logarithmic price scale.

Fibonacci levels and level lines

To show / hide individual levels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, select the check boxes next to the levels that should be visible, or clear the check boxes next to the levels that should be hidden.

To show the reference line

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.

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- On the right side of the dialog, select **Show reference line**.

To use custom levels for the Fibonacci Retracements / Expansions

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, select **Use custom values**.
- In the **Custom** column of each level, click on the value for this level to edit the value.

To change the line style of the level lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, adapt the **Line** settings to your needs.

Control	Description
Color	Color of the level lines
Style	Line style of the level lines
Weight	Width of the level lines
Apply to all levels	Check to use the same line style for all levels. Clear to use individual line styles for each level. You can then click on each level to see / change the line style settings of this level.

Color gradient across levels

To show a color gradient

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, select **Show color gradient**.

To change the colors and transparency of the gradient

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, adapt the **Color Gradient** settings to your needs.

Control	Description
Start Color	First color that is used for the gradient
End Color	Second color that is used for the gradient
Start Level	Level at which the gradient starts with the start color
End Level	Level at which the gradient ends with the end color
Transparency	Transparency of the shaded area in percent (0% = solid)

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Labels and prices for each level

To show the level labels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, select **Show levels**.

To show the prices for each level

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, select **Show prices**.

To change the font of the level labels and prices

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, adapt the **Font** settings to your needs.

Control	Description
Font	Type of font used for the labels and prices of each level
Bold	Check to use a bold style for the labels and prices
Italic	Check to use an italic style for the labels and prices
Size	Size of the font used for the labels and prices
Apply to all levels	Check to use the same font settings for the labels and prices of all levels. Clear to use individual font settings for each level. You can then click on each level to see / change the font settings of this level.

To show the group number next to each level label

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, select **Show group number**.

To modify prices on Logarithmic scale

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Retracement 1 > Levels**.
- On the right side of the dialog, select **Modify prices on Log scale**.

Customizing Fibonacci Arcs

You can show the Fibonacci Arc lines as a full circle rather than as a half circle. Additionally, you can choose which levels are displayed, customize the ratios used to calculate the levels, change the line style for the arc lines, and show / hide the labels for each level.

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Fibonacci levels and arc lines

To show full circles instead of arcs

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Arc 1 > Levels**.
- On the right side of the dialog, select **Show full circle**.

To show / hide individual levels of the arc

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Arc 1 > Levels**.
- On the right side of the dialog, select the check boxes next to the levels that should be visible, or clear the check boxes next to the levels that should be hidden.

To use custom levels for the arc lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Arc 1 > Levels**.
- On the right side of the dialog, select **Use custom values**.
- In the **Custom** column of each level, click on the value for this level to edit the value.

To change the line style of the arc lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Arc 1 > Levels**.
- On the right side of the dialog, adapt the **Line** settings to your needs.

Control	Description
Color	Color of the arc lines
Style	Line style of the arc lines
Weight	Width of the arc lines
Apply to all levels	Check to use the same line style for all levels of the arc. Clear to use individual line styles for each level. You can then click on each level to see / change the line style settings of this level.

Labels for each level

To show the level labels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Arc 1 > Levels**.

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- On the right side of the dialog, select **Show levels**.

To change the font of the level labels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci Arc 1 > Levels**.
- On the right side of the dialog, adapt the **Font** settings to your needs.

Control	Description
Font	Type of font used for the labels of each level
Bold	Check to use a bold style for the labels
Italic	Check to use an italic style for the labels
Size	Size of the font used for the labels
Apply to all levels	Check to use the same font settings for the labels of all levels of the arc. Clear to use individual font settings for each level. You can then click on each level to see / change the font settings of this level.

Customizing Speed Resistance Lines

You can change the color and style of Speed Resistance Lines.

To change the line style of the Speed Resistance Lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Line Style**. For example: **Speed Resistance 1 > Line Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the lines
Style	Line style of the lines
Weight	Width of the lines

Customizing Gann Square

You can choose which lines / Fans / grid line are displayed, change the line style for the lines and grid lines, switch between Single square mode and Multi Square mode and adjust the time and price unit .

Gann Square lines

To show / hide individual lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Lines**. For example: **Gann Square 1 > Lines**.
- On the right side of the dialog, select the check boxes next to the lines that should be visible, or clear the check boxes next to the lines that should be hidden.

To change the line style of the lines

- Right-click on the drawing object and select **Properties**.

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- On the left side of the dialog, select the name of the drawing object, and then **Lines**. For example: **Gann Square 1 > Lines**.
- On the right side of the dialog, adapt the **Line** settings to your needs.

Control	Description
Color	Color of the lines
Style	Line style of the lines
Weight	Width of the lines
Apply to all lines	Check to use the same line style for all line. Uncheck to use individual line style for each line.

Grid lines

To change the line style of the grid lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Lines**. For example: **Gann Square 1 > Lines**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the lines
Style	Line style of the lines
Weight	Width of the lines

Fan and Grid lines view

To show / hide individual fan and grid lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Lines**. For example: **Gann Square 1 > Lines**.
- On the right side of the dialog, under **View** settings, select the check boxes next to the Fans and grids that should be visible, or clear the check boxes next to the Fans and grids that should be hidden.

Control	Description
Upper left Fan	Show / hide Gann Fan starting from the upper left corner of a square
Upper right Fan	Show / hide Gann Fan starting from the upper right corner of a square
Lower left Fan	Show / hide Gann Fan starting from the lower left corner of a square
Lower right Fan	Show / hide Gann Fan starting from the lower right corner of a square
1 point grid	Show / hide 1 point grid used in a Gann Square
1x1 grid	Show / hide 1x1 grid used in a Gann Square
3x3 grid	Show / hide 3x3 grid used in a Gann Square
8x8 grid	Show / hide 8x8 grid used in a Gann Square

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Gann Square Parameters

To change between single and multi square mode

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Parameters**. For example: **Gann Square 1 > Parameters**.
- On the right side of the dialog, switch between single quare mode and multi square mode.

Control	Description
Display Gann Square in	Switch between single square mode and multi square mode of a Gann Square

To adjust time and price units

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Parameters**. For example: **Gann Square 1 > Parameters**.
- On the right side of the dialog, adjust time and price units of Gann Square.

Control	Description
Time unit	Number of bars that makes up the width of the square
Price unit	Absolute price value that makes up height of the square

Customizing Gann Fans

You can change the color and style of all fan lines.

To change the line style of the fan lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Line Style**. For example: **Gann Fan 1 > Line Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the lines
Style	Line style of the lines
Weight	Width of the lines

Customizing Pivot Points

You can change the calculation period and calculation method for the Pivot Points. In addition, you can choose which support / resistance levels are displayed, change the line style for the level lines, extend the lines to the right border of the chart and show / hide the labels and prices for each level. You can also use colored zones for each Pivot Points level.

Calculation method and basis date / time parameters

To change the Pivot Points parameters

- Right-click on the drawing object and select **Properties**.

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- On the left side of the dialog, select the name of the drawing object, and then **Parameter**. For example: **Pivot Points 1 > Parameter**.
- On the right side of the dialog, adapt the parameters to your needs.

Control	Description
Basis Date	Date that is used to define the first day of the calculation period. The Pivot Points object is positioned on the chart starting with this date.
Starting Time	Starting time for the calculation period. This is especially important for intraday (hourly) Pivot Points.
Calculation Period	Time period that is used to retrieve the **Basis Values** for the calculations. This can be set in hours, days, weeks or months.
Calculation Type	Method of calculation to determine the Pivot Points levels. You can see how each level is calculated on the **Levels** property sheet, below the level list. See also the overview in Pivot Points on page 260.
Basis Symbol	Symbol that is used to calculate the Pivot Points levels. This is especially important when several symbols are overlaid in a chart.
Basis Values	Choose if *Close*, *Bid*, *Ask* or *Settlement* prices are used to calculate the Pivot Points. The according values are retrieved automatically for the chosen calculation period. If you want to use different prices, select the **User defined** option and manually edit the values.

Support / resistance levels and level lines

To show / hide individual levels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Pivot Points 1 > Levels**.
- On the right side of the dialog, select the check boxes next to the levels that should be visible, or clear the check boxes next to the levels that should be hidden.

To extend the level lines to the right chart border

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Pivot Points 1 > Levels**.
- On the right side of the dialog, select **Extend to the right**.

To change the line style of the level lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Pivot Points 1 > Levels**.
- On the right side of the dialog, adapt the **Line** settings to your needs.

Control	Description
Color	Color of the level lines
Style	Line style of the level lines
Weight	Width of the level lines
Apply to all levels	Check to use the same line style for all levels. Clear to use individual line styles for each level. You can then click on each level to see /

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change the line style settings of this level.

Color zones for each level

To show color zones

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Pivot Points 1 > Levels**.
- On the right side of the dialog, select **Show Zones**.

To change the colors and transparency of the zones

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Pivot Points 1 > Levels**.
- On the right side of the dialog, adapt the **Zone** settings to your needs.

Control	Description
Color	Color that is used for the zone
Transparency	Transparency of the zone in percent (0% = solid)
Apply to all levels	Check to use the same color and transparency settings for all levels. Clear to use individual colors and transparency settings for each level. You can then click on each level to see / change the settings of this level.

Labels and prices for each level

To show the level labels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Pivot Points 1 > Levels**.
- On the right side of the dialog, select **Show Levels**.

To show the prices for each level

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Pivot Points 1 > Levels**.
- On the right side of the dialog, select **Show Prices**.

To show the chosen calculation period next to the Pivot Points object

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Pivot Points 1 > Levels**.
- On the right side of the dialog, select **Show Label**.

To change the font of the level labels and prices

- Right-click on the drawing object and select **Properties**.

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- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Pivot Points 1 > Levels**.
- On the right side of the dialog, adapt the **Font** settings to your needs.

Control	Description
Font	Type of font used for the labels and prices of each level
Bold	Check to use a bold style for the labels and prices
Italic	Check to use an italic style for the labels and prices
Size	Size of the font used for the labels and prices
Apply to all levels	Check to use the same font settings for the labels and prices of all levels. Clear to use individual font settings for each level. You can then click on each level to see / change the font settings of this level.

Customizing Andrews Pitchfork

You can change the color and style of all lines of the pitchfork. The reference line, which is hidden by default, can be displayed on the chart.

To change the line style of the pitchfork lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Line Style**. For example: **Andrews Pitchfork 1 > Line Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the lines
Style	Line style of the lines
Weight	Width of the lines

To show the reference line

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Options**. For example: **Andrews Pitchfork 1 > Options**.
- On the right side of the dialog, select **Show Reference Line**.

Customizing Wave and Harmonics

You can change the color and style of all lines, adapt the labeling of turning points and relative values, and show / hide the Harmonic Pattern for the last five reference points of a wave.

To customize Wave and Harmonics objects

- Right-click on the drawing object and select **Properties**.
- On the left side of the **Chart Properties** dialog, you will see the name of the chart pane and of the drawing object. For example: **Pane 1 > Wave and Harmonics1**.
- Adapt the settings on the property sheets of this drawing object as shown below.

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To change the line style of the wave lines

- On the left side of the dialog, select **Line Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Show Lines	Check to show the wave lines on the chart
Color	Color of the wave lines
Style	Line style of the wave lines
Weight	Width of the wave lines
Show Marker	Check to show the numeric or alphabetic label of each turning point
Color	Color of the label
Font	Type of font used for the label
Size	Size of the font used for the label
Bold	Check to use a bold style for the label
Italic	Check to use an italic style for the label
First Reference Point	Enter the numeric value for the label of the first reference point of the wave (0 by default)

To change the display options for the wave labels

- On the left side of the dialog, select **Labels**.
- On the right side of the dialog, choose a font, color, size and style (bold / italic) for the labels in the section **Font/Color**.
- Check **Alternate Font** and choose a color for it to show every second value in another color.
- Check **Show Background** and choose a background color and transparency setting to show all labels in a transparent box.
- Check all options in the section **Display** that should be shown on the chart.

Show reference point values
Show absolute change
Show percentage change
Show number of bars between reference points
Show time between reference points
Show percentage retracement of preceding wave

To change the line style of the Harmonics reference and relations lines

- On the left side of the dialog, select **Harmonics**.
- Adapt the settings for the **Reference Lines** (connecting the turning points) to your needs:

Show Lines	Check to display the reference lines of the Harmonic Pattern in another color than the other wave lines. Choose a **Color**, **Style** and **Weight** for the reference lines.
Show Fill	Check to display a shaded area inside the Harmonic Pattern. Choose a **Color** and **Transparency** (0% = solid) for this area.

- Adapt the settings for the **Relation Lines** (connecting highs with highs and lows with lows) to your needs:

Show Lines	Check to display the relation lines of the Harmonic Pattern. Choose a **Color**, **Style** and **Weight** for the relation lines.
Show Fibonacci relations	Check to show the percentage relations between the connected highs / lows.

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Show absolute changes	Check to show the absolute changes between the connected highs / lows.
Show percentage changes	Check to show the percentage changes between the connected highs / lows.
Show number of bars between reference points	Check to show the number of bars between the connected highs / lows.
Show time between reference points	Check to show the amount of time between the connected highs / lows.

Customizing Text

You can show a rectangle around the text object, and add one or more arrows that point from the text to other chart objects. In addition, you can change the font and color of the text.

To show one or more arrows pointing from the text outwards

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the text object (the name is equal to the text that is displayed on the chart).
- On the right side of the dialog, select **Show Arrow**.
- Next to the **Show Arrow** label, choose the number of arrows that should be displayed.

> **Note** Each arrow has a reference point at its tip. You can drag and drop it to make the arrow point at other chart objects.

To show a rounded rectangle around the text

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the text object (the name is equal to the text that is displayed on the chart).
- On the right side of the dialog, select **Show rectangle around text**.

To change the font and color of the text

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the text object (the name is equal to the text that is displayed on the chart), and then **Font**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Font	Type of font used for the text
Font Size	Size of the font used for the text
Foreground	Color of the text
Bold	Check to use a bold style for the text
Italic	Check to use an italic style for the text

Customizing Vertical, Fibonacci and Cycle Lines

You can customize the color and style of all lines, and change the calculation method (timing) for the reference interval.

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Vertical, Fibonacci and Cycle Lines

To change the line style of vertical or cycle lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Line Style**. For example: **Vertical lines 1 > Line Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the lines
Style	Line style of the lines
Weight	Width of the lines

To change the timing of vertical lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Timing**. For example: **Vertical lines 1 > Timing**.
- On the right side of the dialog, choose a timing setting:

Use number of bars	The reference interval is calculated in bars, all other intervals are set accordingly. This means, for example, that if you use a daily compression, *trading days* (bars) will be used to calculate the interval.
Use date and time	The reference interval is calculated in days (or according to the used compression), all other intervals are set accordingly. This means, for example, that if you use a daily compression, *calendar days* will be used to calculate the interval. This include weekends and exchange holidays.

Note Cycle lines always use trading days (bars) for calculating the intervals.

Fibonacci vertical lines

To show / hide individual levels

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci vertical lines1 > Levels**.
- On the right side of the dialog, select the check boxes next to the levels that should be visible, or clear the check boxes next to the levels that should be hidden.

To use custom levels for the Fibonacci vertical lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci vertical lines 1 > Levels**.
- On the right side of the dialog, select **Use custom values**.
- In the **Custom** column of each level, click on the value for this level to edit the value.

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To change the line style of the level lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci vertical lines 1 > Levels**.
- On the right side of the dialog, adapt the **Line** settings to your needs.

Control	Description
Color	Color of the level lines
Style	Line style of the level lines
Weight	Width of the level lines
Apply to all levels	Check to use the same line style for all levels. Clear to use individual line styles for each level. You can then click on each level to see / change the line style settings of this level.

To show the group number next to each level label

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci vertical lines1 > Levels**.
- On the right side of the dialog, select **Show group number**.

To show the line number

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci vertical lines1 > Levels**.
- On the right side of the dialog, select **Show line number**.

To show the date for each level

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci vertical lines1 > Levels**.
- On the right side of the dialog, select **Show date**.

To show the period for each level

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci vertical lines1 > Levels**.
- On the right side of the dialog, select **Show period**.

To change the font of the level labels and prices

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Levels**. For example: **Fibonacci vertical lines1 > Levels**.
- On the right side of the dialog, adapt the **Font** settings to your needs.

Control	Description

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Font	Type of font used for the labels and prices of each level
Bold	Check to use a bold style for the labels and prices
Italic	Check to use an italic style for the labels and prices
Size	Size of the font used for the labels and prices
Apply to all levels	Check to use the same font settings for the labels and prices of all levels. Clear to use individual font settings for each level. You can then click on each level to see / change the font settings of this level.

Customizing Price Change

You can choose which of the calculated values are displayed on the chart, move the reference point of the price change object to a selected value, and change the line style of the object.

To change the line style of the price change lines

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Line Style**. For example: **Price Change 1 > Line Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the lines
Style	Line style of the lines
Weight	Width of the lines

To change the display options for the price change object

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Options**. For example: **Price Change 1 > Options**.
- On the right side of the dialog, adapt the default **Display** settings to your needs.

Control	Description
Reference point value	Check to show the price at the reference point
Target point value	Check to show the price at the target point
Target point % change	Check to show the difference between the two points as a percentage
Target point absolute price change	Check to show the difference between the two points as an absolute value
Line between reference and target point	Check to show a line connecting the reference and the target point

To move the reference point

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Options**. For example: **Price Change 1 > Options**.
- On the right side of the dialog, select an option in the section **Move Reference Point to**:

Target point	Check to move the reference point to the target point
Last bar close value	Check to move the reference point to the *Close* price of the last (current)

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	bar
Last visible bar close value	Check to move the reference point to the *Close* price of the last visible bar on the screen

Customizing Arrows

You can change the orientation of the arrow, as well as its colors, borders and transparency. These settings depend on the orientation of the arrow.

To change the orientation of an arrow

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Orientation**. For example: **Arrow tool 1 > Orientation**.
- On the right side of the dialog, select the orientation **Up** or **Down**.

To change the colors, borders and transparency settings of an arrow

> **Note** These settings depend on the orientation of the arrow.

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Up Style** or **Down Style**. For example: **Arrow tool 1 > Up Style**.
- On the right side of the dialog, adapt the default settings to your needs.

Control	Description
Line Color	Color of the border lines
Style	Line style of the border lines
Weight	Width of the border lines
Fill Color	Fill color of the body of the arrow
Show Line	Check to show the border lines
Show Fill	Check to show the body
Transparency	Transparency of the shaded area in percent (0% = solid)

Hiding and Deleting Drawing Objects

When you have added drawing objects to a chart, you can later either hide them temporarily, so that they are not visible anymore, or remove them completely from the chart (delete them).

You can hide the complete drawing object, including all lines and levels, or hide individual lines or levels of a drawing object using visibility points (for example, certain levels of a Fibonacci object). When you change the chart type or data compression of a chart, you can choose to keep drawing objects visible, or automatically hide them.When you delete a drawing object, it is removed from the chart completely, including all its settings. You can also delete all drawing objects (visible or invisible) at once.

Hiding Drawing Objects

You can temporarily hide a drawing object from the chart and data table view, without removing it from the chart completely (for deleting drawing objects, see Deleting Drawing Objects on page 297).

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In some cases, for example when you change the chart type from a bar chart to a Point and Figure chart, drawing objects are automatically hidden. When you change the data compression of a chart, for example from a daily chart to an intraday chart, drawing objects still remain visible by default. You can adapt the automatic hiding settings, so that for example drawing objects remain visible when changing the chart type.

Note When changing the data compression from a higher to a lower compression, for example from a daily chart to a 5-minute chart, some drawing objects might not be visible anymore because there is not enough data loaded in the chart, or because the lines of the object are too far away from the price. When the starting point for a trend line is for example three months in the past, it might not show up in a 5-minute chart.

To hide a drawing object

- Right-click on the drawing object and choose **Hide**.

Alternatively, you can also use the **Format Objects** dialog to hide a drawing object:

- On the **Format** menu, click **Objects**.

Note You can also click on the **Chart Objects** icon in the **Chart** toolbar:

- In the **Format Objects** dialog, click on the drawing object to select it.
- Click **Hide**. The blue check mark next to the drawing object will disappear.

Note Once an object is hidden from a chart, it's corresponding columns in the data table view will be hidden automatically as well.

To show a hidden drawing object in the chart

- On the **Format** menu, click on **Objects**.
- In the **Format Objects** dialog, click on the drawing object to select it.
- Click **Show**. A blue check mark next to the drawing object will appear.

Note You can also right-click on the chart and select **Show Hidden Objects** to display a hidden object.

To automatically hide a drawing object when changing the chart type or compression

- Right-click on the drawing object and select **Properties**.
- On the left side of the dialog, select the name of the drawing object, and then **Hide**. For example: **Line 1 > Hide**.
- On the right side of the dialog, select all hiding options that you want use, and clear the settings you don't want to use:

Hide automatically when chart mode (Financial, Renko etc.) is changed	Check to automatically hide the drawing object when the chart type is changed. *Exception:* Changing between different **Finance** chart types (for example, a bar chart and a candlestick chart) will not hide the object.
Hide automatically when chart type (Tick by Tick, Daily etc.) is changed	Check to automatically hide the drawing object when the main data compression of the chart is changed.

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	Explanation: This means that the object will be hidden when changing for example from a daily compression to any intraday compression, but not when changing from one intraday compression to another (for example, switching from a 1-minute chart to a 1-hour chart).
Hide automatically when time compression (1 Minute, 2 Minutes etc.) is changed	Check to automatically hide the drawing object when the data compression of the chart is changed in any way. *Explanation*: This means that the object will also be hidden when changing from one intraday compression to another, or from one TickBar compression to another.

To add (remove) drawing objects for certain chart types and data compressions

When you automatically show or hide drawing objects when switching chart types or data compressions (**Hide** property of drawing objects), you can later add drawing objects to (or remove them from) certain chart types or data compressions again. You can for example show a trend line in weekly and daily charts, but automatically hide it when changing to a monthly, intraday or tick compression.

- Add the drawing object to the chart (for example in a weekly compression).
- Adapt the automatic hide settings so that the drawing object is hidden when you change the main data compression of the chart (see **Hide** property above).
- Change the data compression of the chart (for example to a daily compression). The drawing object is hidden automatically.
- On the **Format** menu, click **Objects**.
- In the **Format Objects** dialog, choose the drawing object that you want to add to (or remove from) the current chart type and data compression.
- Click **Add** to add the drawing object to the current chart type and data compression. It will now be shown in both the original compression and the current compression, but hidden in all other compressions.

Note To remove the drawing object again from the current chart type and data compression, click **Remove** instead of **Add**.

Hiding and Showing Lines / Levels with Visibility Points

With visibility points you can easily hide individual lines (or levels) of many drawing objects, or reveal hidden lines (levels). For some drawing objects (trend lines / channels and Andrews Pitchfork), you can also add equidistant lines – so-called action/reaction or warning lines.

Visibility points are available for all drawing objects except shapes, arrows, texts, vertical lines and price change objects.

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To hide a line / level of a drawing object

- Click on the drawing object to select it.
- Double-click on the visibility point of the line / level that you want to hide.

To show a hidden line / level of a drawing object

- Click on the drawing object to select it.
- Click on the visibility point of a line / level near the line / level that you want to show and hold the mouse button down.
- Drag the visibility point over the area where the hidden line / level would be shown. A white preview line will appear at this level.

- You can drag the visibility point further to reveal more hidden lines / levels.
- Release the mouse button to show all revealed lines in the chart.

Additional uses of visibility points

- *Lines and trend channels*: Convert a trend line to a trend channel by dragging the visibility point to define a third reference point, and add equidistant action/reaction lines to the channel by dragging the visibility point above or below the channel. See Lines and Trend Channels on page 246.
- *Regression lines and channels*: Draw additional channel lines at a distance of two, three or more standard deviations from the regression line by dragging the visibility point above or below the regression line / channel. See Regression Lines and Regression Channels on page 251.
- *Andrews Pitchfork*: Draw equidistant warning lines by dragging the visibility point above or below the pitchfork. See Andrews Pitchfork on page 262.

Deleting Drawing Objects

You can delete drawing objects from a chart. They will be removed including all their settings.

To delete a drawing object

> **Note** *This action cannot be undone.* This will delete the selected drawing object with all its settings.

- Right-click on the drawing object and choose **Delete**.

Alternatively, you can also use the **Format Objects** dialog to delete a drawing object:

- On the **Format** menu, click **Objects**.

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Note You can also click on the **Chart Objects** icon in the **Chart** toolbar:

- In the **Format Objects** dialog, click on the drawing object to select it.
- Click **Delete**. The drawing object will disappear from the object list.

To delete all drawing objects of a chart at once

Note *This action cannot be undone.* This will delete all drawing objects of the chart, visible or hidden, with all their settings. When you are using linked documents (see Linking Documents to a Price Page on page 89), this will only apply to the symbol that is currently active.

- On the **Format** menu, click **Delete all Drawing Tools**.

Note You can also click on the **Delete all Drawing Tools** icon in the **Drawing** toolbar:

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Analysis Tools

TeleTrader Professional offers a wide range of tools for technical analysis that you can apply to your charts. Many of those tools can be customized to fit your needs. You can even create new analysis tools with the simple, yet powerful TeleTrader Language.

The analysis tools in TeleTrader Professional use mathematical techniques, like calculations, statistics, pattern recognition techniques and many more, to calculate indicators and signals and display them on the screen. Most so-called indicators and signals are displayed on the chart as a visual interpretation of market activity.

Note All indicators and signals, including custom studies, can also be added as study columns to a price page. See Adding, Removing and Customizing Study Columns on page 91 for details.

Indicators and signals

The analysis tools (studies) in TeleTrader Professional are divided into two main categories:

- *Indicators* are calculations that are applied to the price and volume data that you can see in a chart. Indicators visualize the available data in a different way so that you can interpret it more easily. A typical example of an indicator is the *Moving Average*.
- *Signals* also use calculations on price and volume data, but typically generate signals that help the trader to decide when to buy or sell. Signals often use indicators for their calculations. Typical examples of signals are crossovers (intersection of two indicators). Signals may also include various *pattern recognition* techniques, that help the trader find typical constellations that have been significant in the past. These constellations are used for example to identify possible turning points in a trend. Many pattern recognition systems are based on the traditional Japanese candlestick formations. A typical example of pattern recognition is the *Hammer* or the *Morning Star*.

Indicators and signals can inform you about various aspects of the market, such as its trend, volatility, momentum, market strength, cycle, and so on. Technical studies are used to help traders identify, analyze, and assess market opportunities and risks, determine and forecast market direction, and establish long or short positions. It is always an individual decision which analysis techniques you want to apply to a certain security for interpreting price movements and market trends.

To help you choose between the available studies, several groups have been defined, such as:

- *Trend*: A trend is the direction of a price movement over a longer period of time.
- *Momentum*: Momentum is the speed at which the price moves in a trend.
- *Volatility*: Volatility is the price fluctuation of a security.
- There are also *spread*, *cycle*, *market breadth, volume* and other studies.

If you want to get a notification (sound, message or e-mail) when a study crosses the time series or a drawing object, you can use intersection alerts: See Intersection Alerts on page 326.

To get notified whenever a new signal marker appears on the chart, use study alerts: See Study Alerts on page 328.

The analysis tools (studies) available in TeleTrader Professional are listed in the Study Reference. In-depth information about creating your own analysis tools can be found in a separate section about the syntax of the TeleTrader Language on page 459.

Note TeleTrader Software GmbH wants to point out explicitly that all examples in this manual were made up in retrospect and show an idealized situation. Interpretations of indicators and signals are intended as a thought-provoking impulse and should in no way be understood as a recommendation to buy or sell a security.

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Inserting Studies

The analysis tools in TeleTrader Professional are generally called *studies*. They are divided into two main categories: Indicators and signals. All of them can help you to identify and analyze market opportunities and risks. An *indicator* visualizes the data in a different way to help you interpret it more easily; a *signal* also gives you indications to establish long or short positions.

The basic steps to insert an indicator or signal into a chart (or a price page, see Adding, Removing and Customizing Study Columns on page 91) are relatively easy and are described below. However, there are many ways to customize the study before or after you insert it – for details about the various settings, follow the links that are provided at the end of each step.

You can find an overview of the studies that are available in TeleTrader Professional in the Study Reference.

To insert a study into a chart

- Right-click on the chart and choose **Insert Study**.

> **Note** You can also click on the **Insert Study** icon in the **Chart** toolbar:

- All available studies are shown on the left side. Click on the study that you want to insert.
  - To restrict the study list to **Indicators** or **Signals**, click the corresponding tabs. If you want to see all studies regardless of their type, stay on the **All** tab.
  - To group studies by their first letter (**A…Z**), **Category** or assigned **Tag**, click on the corresponding button. The button **Favorite** shows only the studies that you have defined as favorites. See Editing Study Descriptions, Categories and Tags on page 314.
  - To search for a study, type its name, category or tag into the search field at the bottom of the dialog.

> **Note** Studies that you have used before are shown at the top of the list in the **Recently used** group.

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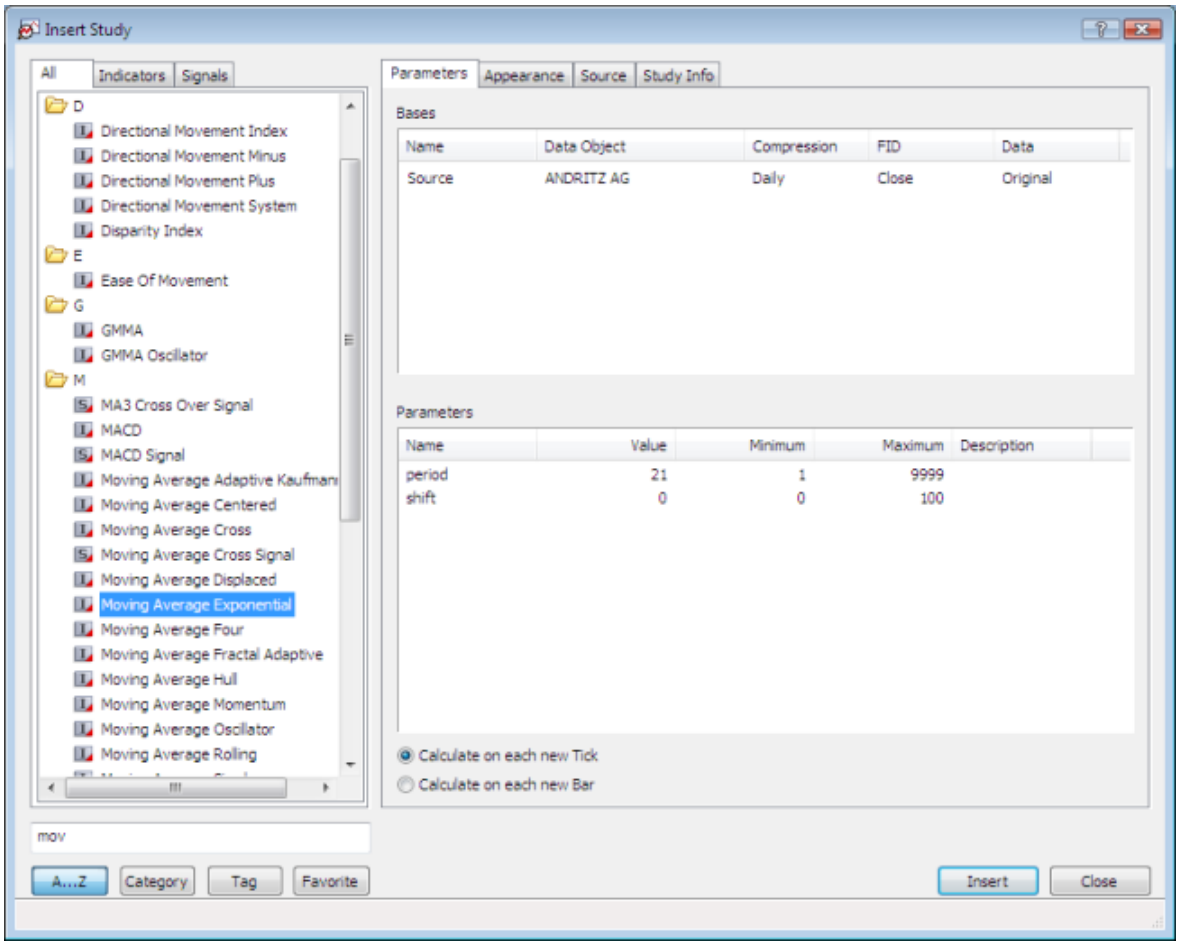
- On the **Parameters** tab on the right side, adapt the bases and parameters of your study to your needs. For details about the possible settings, see Setting the Parameters of a Study on page 302.



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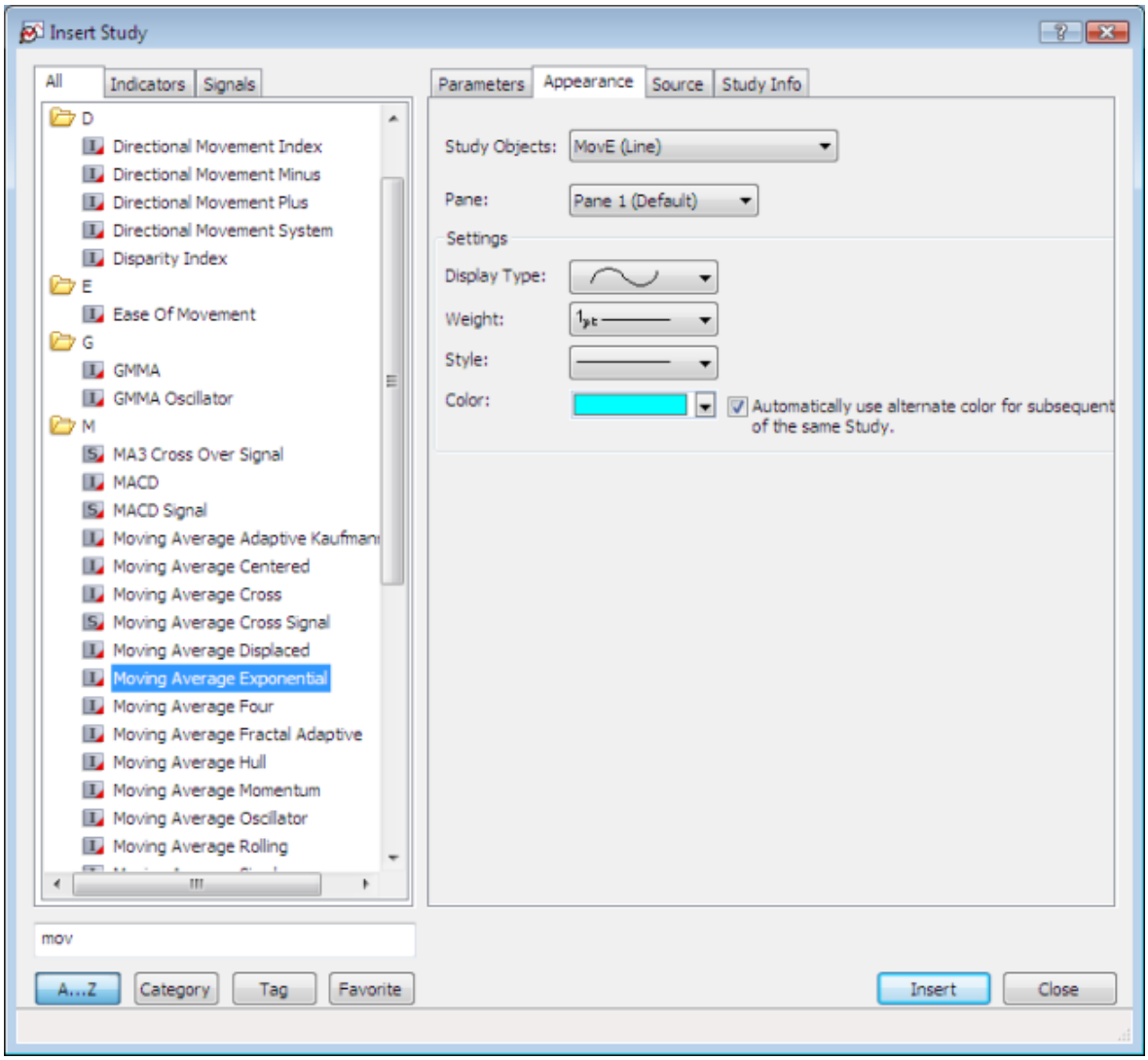
- On the **Appearance** tab, choose into which pane you want to insert the study, and adapt colors, fonts and styles. For details about the possible settings, see Defining the Appearance of a Study on page 305.



- Click **Insert** to insert the study into the chart.
- You can now insert more studies like shown above, or close the **Insert Study** dialog by clicking **Close**.

Setting the Parameters of a Study

On the **Parameters** tab of the **Insert Study** dialog, you can set the bases and input parameters for a study before you insert it. You can also choose whether the study will be updated (recalculated) on each tick or only after a bar has been completed. After you have inserted a study, you can still change these parameters in the **Chart Properties** dialog. You can also save your settings as default for this study by clicking the **Set As Default** button.

Note

When inserting study columns into price pages, some more settings are available on the **Parameters** tab. You can for example choose the data compression that should be used, and define the number of records that should be downloaded for each symbol (time region). For details, see Adding, Removing and Customizing Study Columns on page 91.

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Bases

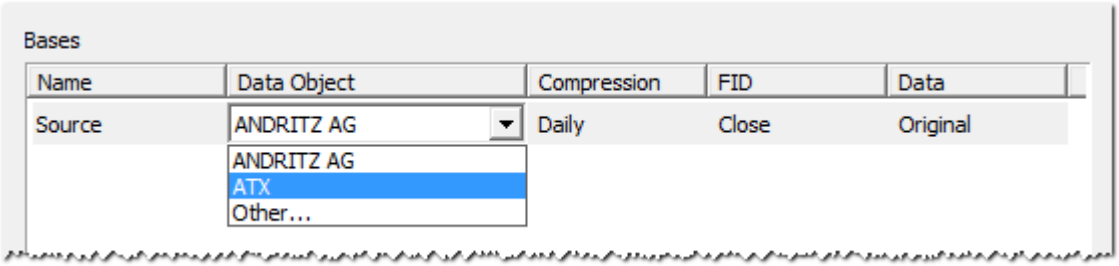
The base is the symbol (security, future, index or else) or other study that the inserted study is calculated for. By default, Professional uses the symbol displayed on the chart as the base (in price pages, the current row symbol is used). You can change the base – the study is then re-calculated for the new base. Some studies need more than one base, for example *Bearish* or *Bullish Divergence*.

For calculating the study, not all elements of a base are needed in most cases. For example, the *Moving Average Simple* uses only the *Close* prices of a security. You can change the element that is used in the calculation, so you can for example calculate the Moving Average with the *Open* prices of a security.

Note When the **FID** column of the base displays **All**, more than one element of the base is needed for the calculation. In this case you can change the elements that are used only in the source code of the study.

To change the bases of your study

- In the **Data Object** column of the base, click on the name of the symbol.
- From the list that appears, choose a symbol or study that is visible on your chart as your base. In price pages, the current row symbol will be used by default.



If you want to choose a symbol for your base that is not visible on the chart:

- Choose **Other** from the list. The **Symbol Search** dialog is displayed.
- Enter your search term in the first field on the left side and change the search settings, if necessary.
- Click on the green button or press the ENTER key to start the search.
- Click on the symbol that you want to use as a base for your study.
- Click **OK**.

To change the base element (price) used for calculation

- In the **FID** column of the base, click on the base element that is currently used for calculation.
- From the list that appears, choose a different element for calculation.

To change the data type used for calculation

- In the **Data** column of the base, click on the current entry.
- From the list that appears, choose **Original** if you want to use the original data transmitted from the exchange, or choose **Display** if you want to use the data as it is currently displayed in the chart.

Note For example, when you are using a Heikin Ashi chart, the setting **Original** will use the prices transmitted from the exchange in all study calculations, and the setting **Display** will use the Heikin Ashi transformations of those prices for all calculations.
At the moment, the setting **Display** has no effect when used for study columns in price pages.

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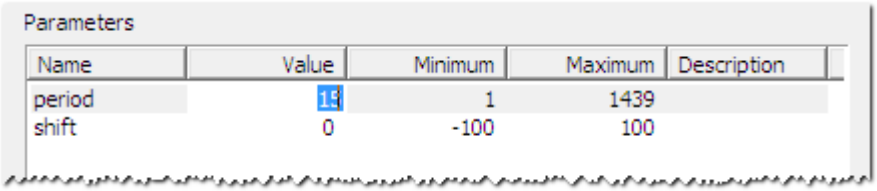
Parameters

Parameters are used as input values for the calculation of a study. For example, the *Moving Average Simple* has two parameters: *period* and *shift*. The parameter *period* controls the number of bars (time period) that is used for calculating the average; the parameter *shift* controls the vertical displacement of the Moving Average line in relation to the symbol.

You can change the way that a study is calculated by setting its parameters to different values. Each parameter includes a short description of what it does in the **Description** column.

To change a parameter value

- In the **Value** column of the parameter, click on the current value to make it editable.
- Enter the new value.



Note The new value must be set between the values of the **Minimum** and **Maximum** columns.

Calculation settings

In the bottom part of the **Parameters** tab, you can choose whether the study should be recalculated on each new tick or on each new bar. By default, this option is set to **Calculate on each new Tick**. If you are experiencing performance problems on fast-ticking charts with many inserted studies, you can also change this setting to **Calculate on each new Bar** – the study will then only be updated when a bar is completed (depending on the data compression of the chart).

Note For the following studies, this option is set to **Calculate on each new Bar** by default. It is recommended to keep this setting due to technical reasons:

Candlestick Pattern Recognition
Dark Cloud
Doji
Evening Star
Engulfing Pattern
Hammer
Hanging Man
Morning Star
Piercing Pattern
Sanku
Shooting Star
Spinning Top

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Defining the Appearance of a Study

On the **Appearance** tab of the **Insert Study** dialog, you can change how the study is displayed on the chart (for example its colors and styles) before you insert it. After you have inserted a study, you can still change its appearance in the **Chart Properties** dialog. You can also save your settings as default for this study by clicking the **Set As Default** button.

Note When inserting study columns into price pages, only a few color settings are available on the **Appearance** tab. For details, see Adding, Removing and Customizing Study Columns on page 91.

Note If you select **Activate study color inheritance on overlaid charts** option under **Tools** > **Options** > **Chart**, color of the study will be based on color of the base symbol on a chart. See Chart Settings on page 340.

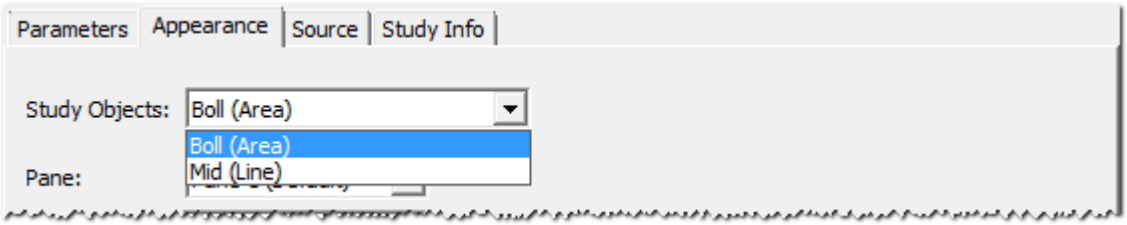
Study objects

Every study consists of one or more so-called *study objects*. A study object is a visible object that is drawn on the chart, such as a line, a shaded area or a marker. Each study object has a unique set of properties that define how they are displayed on the chart, such as colors, line widths, line styles, fonts, transparency settings and many more.

As some studies have more than one study object, you first have to choose for which study object you want to define its appearance on the screen. For example, the *Bollinger Bands* indicator consists of a line study object and an area study object.

To choose a study object

- Click on the **Study Objects** arrow.



- Choose the study object that you want to change.
- Adapt the settings to your needs.

Settings for different study object types

Depending on the type of the study object you choose, different settings are available.

Line	Change the display type, width, style and color of a line study object. See Line Settings on page 306.
Area	Change the type, line colors, width and style, the fill colors and the transparency of an area study object. See Area Settings on page 307.
Marker	Change the border colors, width, the fill colors, the transparency, the shape size and the font of a marker study object. See Marker Settings on page 308.

Note You cannot change the type of a study object in this dialog (for example, use a line instead of an area). This would have to be done by editing the source code of a study.

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Line Settings

A line study object is displayed on the chart as a single line. You can change its display type, width, style and color.

Note When inserting study columns into price pages, only a few color settings are available on the **Appearance** tab. For details, see Adding, Removing and Customizing Study Columns on page 91.

Line settings dialog

Control	Description
Pane	Chart pane that the study object is displayed in **Top** — Display the study object in a new pane at the top of the chart window **Pane x** — Display the study object in the specified pane **Bottom** — Display the study object in a new pane at the bottom of the chart window
Display Type	Display type of the line: **Line** **Histogram** **Points** **Steps**
Weight	Width of the line
Style	Style of the line
Color	Color of the line
Automatically use alternate color for subsequent inserts of the same study	Check to automatically use a new line color if this study is later inserted again into the same chart pane. Uncheck to use the default line color every time this study is inserted into the same chart pane.

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Area Settings

An area study object is displayed on the chart as a shaded, transparent area with two lines at the borders. You can change the type of the area object, the colors, width and style of the border lines, and the fill colors and transparency of the shaded area.

Note When inserting study columns into price pages, only a few color settings are available on the **Appearance** tab. For details, see Adding, Removing and Customizing Study Columns on page 91.

Area settings dialog

Control	Description
Pane	Chart pane that the study object is displayed in **Top** — Display the study object in a new pane at the top of the chart window **Pane x** — Display the study object in the specified pane **Bottom** — Display the study object in a new pane at the bottom of the chart window
Type	Choose which type of area is used: **Continuous** — Connects all parts of an area with continuous border lines / shadings **Segmented** — Displays all parts of an area as independent segments (relevant for areas that have many different segments, for example the signal *A Kamu Elder Ray Digital*). **Brick** — Draws transparent rectangles around each bar between the upper and lower borders of the area
Line	Define the appearance of the border lines in this section
Line #1	Color of the first border line, usually the top line Check the box next to the color selection to display this border line on the chart
Line #2	Color of the second border line, usually the bottom line Check the box next to the color selection to display this border line on the chart
Weight	Width of both border lines
Style	Style of both border lines
Fill	Define the appearance of the shaded area between the top and bottom lines in this section
#1 above #2	Color of the shaded area when the first border line is above the second border line Check the box next to the color selection to show this shaded area on the chart
#2 above #1	Color of the shaded area when the first border line is below the second border line

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	Check the box next to the color selection to show this shaded area on the chart
Transparency	Transparency of the shaded area in percent (0% = solid)

Marker Settings

A marker study object is displayed on the chart as a combination of two arrows and some marker text.

The *up or down arrow* is displayed below or above the marked bar and points either upwards or downwards. You can change the colors and width of the border lines, the fill colors and transparency of the arrow, and its size.

The *price arrow* is displayed at a certain price level of the marked bar, usually the *Close* price. You can change its outline and fill color, transparency and size.

The *marker text* is displayed below or above the up / down arrows. You can change its font and style.

Note When inserting study columns into price pages, only a few color settings are available on the **Appearance** tab. For details, see Adding, Removing and Customizing Study Columns on page 91.

Marker settings dialog

Control	Description
Pane	Chart pane that the study object is displayed in **Top** Display the study object in a new pane at the top of the chart window **Pane x** Display the study object in the specified pane. **Bottom** Display the study object in a new pane at the bottom of the chart window
Up / Down Arrow	Define the appearance of the upwards or downwards oriented arrows in this section
Up Fill	Color of the body for upwards arrows Check to show the body of the up arrows
Up Border	Color of the borders for upwards arrows Check to show the borders of the up arrows
Down Fill	Color of the body for downwards arrows Check to show the body of the down arrows
Down Border	Color of the borders for downwards arrows Check to show the borders of the down arrows
Weight	Width of the border lines
Transparency	Transparency of the body in percent (0% = solid)
Shape Size	Size of the up / down arrows

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Price Arrow	Define the appearance of the vertical price arrows in this section
Fill	Color of the body of the price arrows Check to show the body of the price arrows
Border	Color of the borders of the price arrows Check to show the borders of the price arrows
Weight	Width of the border lines
Transparency	Transparency of the body in percent (100% = solid)
Shape Size	Size of the price arrows
Font	Define the type of font used for the marker text in this section
Bold	Check to apply a bold font to the text
Italic	Check to apply an italic font to the text
Size	Size of the font used for the marker text

Viewing the Source Code & Study Info

When browsing through studies in the **Insert Study** dialog, you might want to see more detailed information about a study, for example how it is calculated or what it is supposed to indicate on the chart.

To display the source code of a study

- Click on the **Source Code** tab.

> **Note** You cannot change the source code here. To do this, you have to use the **Study Editor** (see Editing and Managing Studies on page 312). Click on the button **Study Editor** to automatically switch to the editor.

To display basic information for a study

- Click on the **Study Info** tab.

> **Note** You cannot change the description, categories and tags here. To do this, you have to use the **Study Editor** (see Editing and Managing Studies on page 312). You can also see this information in the **Chart Properties** dialog.

Changing the Properties of Inserted Studies

When you insert a study into a chart (or a price page), you can adapt its parameter settings and its appearance in the **Insert Study** dialog. Once it is visible in the document, you can of course change these properties at any time.

To change the properties of an inserted study

- Click on the study to select it.
- Right-click the study and choose **Properties**.
- In the **Chart Properties** dialog, your study should already be selected in the tree on the left side.

> **Note** If the study is not selected, click on **Studies**, and then click on the name of the study.

- Click on the entry **Parameters** or **Appearance** to adapt the settings to your needs. For details about the possible settings, see:

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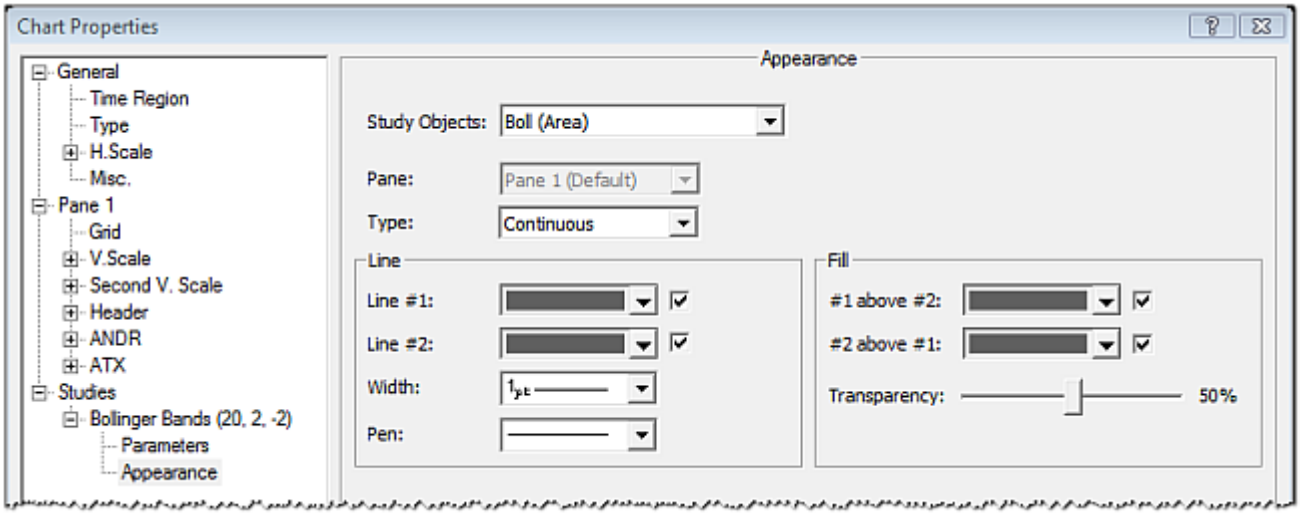
- Setting the Parameters on page 302
- Defining the Appearance of a Study on page 305



Hiding and Deleting Inserted Studies

You can hide or delete studies that you have inserted in a chart. If you hide a study, it is not visible in the chart anymore, but you can show it again with exactly the same settings that it had before. If you delete a study, it is removed from the chart completely.

Some studies consist of more than one study object - for example, the Bollinger Bands indicator consists of a line study object and an area study object. In these cases, you can also hide single study objects instead of the whole study.

> **Note** In price pages, study columns can be removed like all other price pages columns. See also Adding, Removing and Customizing Study Columns on page 91.

To hide a study object in the chart

- Click on the study object, for example the line, to select it.
- Right-click the study object and choose **Hide**.

Alternatively, you can also use the **Format Objects** dialog to hide a study object:

- On the **Format** menu, click **Objects**.

> **Note** You can also click on the **Chart Objects** icon in the **Chart** toolbar:

- In the **Format Objects** dialog, click on the study object to select it.
- Click **Hide**. The blue check mark next to the study name will disappear.
- Click **OK** to return to the chart window.

To show a hidden study object in the chart

- On the **Format** menu, click **Objects**.
- In the **Format Objects** dialog, click on the study object to select it.

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- Click **Show**. A blue check mark next to the study name will appear.
- Click **OK** to return to the chart window.

To delete an entire study from the chart

- Click on the study, for example the line, to select it.
- Right-click the study and choose **Delete**.

Alternatively, you can also use the **Format Objects** dialog to delete a study:

- On the **Format** menu, click on **Objects**.
- In the **Format Objects** dialog, click on the study to select it.
- Click **Delete**. The study will disappear from the object list.
- Click **OK** to return to the chart window.

> **Note** If a study consists of more than one study object, deleting one object of the study will also remove the other study objects. For example, when you remove the middle line study object of a Bollinger Bands study, the area study object will be deleted as well.

Moving and Copying Inserted Studies

You can move study objects that you have inserted to another chart pane, or copy them to another chart window.

To move a study to another chart pane

- Click on the study to select it.

> **Note** To select more than one study object of the same study at once, hold the SHIFT key down and click on each study object that you want to add to the selection. This only works as long as the study objects are visible in the same chart pane.

- Hold the mouse button down and drag the study to another pane.
- Release the mouse button to move the study to the other pane.

> **Note** To only move one study object to another chart pane (for example, only the middle line of the *Bollinger Bands*), hold the ALT key while moving the study object. You can also change the chart pane that the study is displayed in the **Chart Properties** dialog.

To copy a study to another chart window

- Click on the study to select it.
- Hold the mouse button down and drag the study to another chart window.
- Release the mouse button to copy the study to the other chart window.

Basing Studies on Other Studies

You can base a study on another study. This way, you can for example show the *Momentum* of a *Moving Average*, or similar scenarios.

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> **Note** At the moment, this is only possible in charts, not in price page study columns.

To base a study on another study

- Right-click on the chart and choose **Insert Study**.
- In the study list on the left side, click on the *first study* (for example *Moving Average Simple*) that you want to insert.
- Adapt the settings on the **Parameters** and **Appearance** tabs to your needs, if necessary.
- Click **Insert** to insert the first study into the chart.
- In the study list on the left side, now click on the *second study* (for example *Momentum*) that you want to insert.
- On the **Parameters** tab, click in the **Data Object** column of the base for your second study.
- From the list that appears, choose the first study that you inserted as your base (for example *MovS1* for your *Moving Average Simple* indicator).
- Adapt the other settings on the **Parameters** and **Appearance** tabs to your needs, if necessary.

> **Note** On the **Appearance** tab, be sure to choose the correct pane for the second study.

- Click **Insert** to insert the second study into the chart.

Editing and Managing Studies

Each study is delivered to you with the most commonly used settings, including a short description for the study, and one or more assigned categories. You can change the default settings, description and categorization with the **Study Editor**. In contrast to the settings in the **Insert Study** and **Chart Properties** dialogs, all changes done with the study editor will be the new default settings for this study, and will be used any time you insert the study.

If you want to make bigger changes to a study, you can also edit its source code. The source code is the programming code used to calculate a study and draw it on the screen – it is written in the TeleTrader Language, which is an easy programming language designed especially for this purpose.

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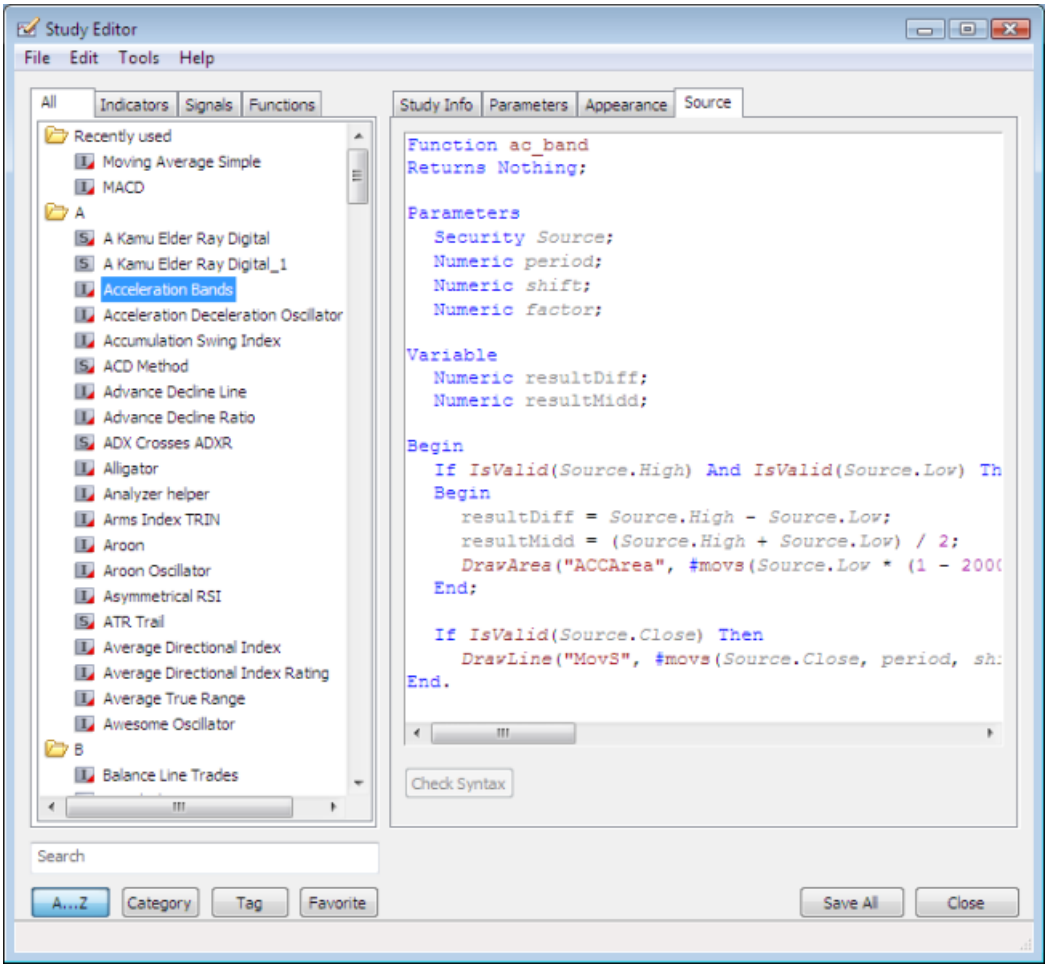
In the **Study Editor** dialog, you can also create new studies (or delete custom studies). You can share studies with others by exporting them or sending them by e-mail. If you want to protect the source code of studies that you have created yourself, you can do so by setting a password.



Changing the Default Settings for Studies

When you insert a study into a chart (or a price page), you can adapt its parameter settings and its appearance in the **Insert Study** dialog. These changes only apply for this one instance of the study. If you want to use the same settings any time you insert this study, you have to change its default settings. You can do this by clicking the **Set As Default** button in the **Insert Study** dialog or the **Chart Properties** dialog, or by adapting the settings in the **Study Editor**.

To change the default settings for a study in the Study Editor

- On the **Tools** menu, click **Study Editor**.
- In the study list on the left side, click on the study.
  - To restrict the study list to **Indicators** or **Signals**, click the corresponding tabs. If you want to see all studies regardless of their type, stay on the **All** tab.
  - To group studies by their first letter (**A…Z**), **Category** or assigned **Tag**, click on the corresponding button. The button **Favorite** shows only the studies that you have defined as favorites. See Editing Study Descriptions, Categories and Tags on page 314.
  - To search for a study, type its name, category or tag into the search field at the bottom of the dialog.
- On the **Parameters** tab, adapt the bases and parameters of your study to your needs. For details about the possible settings, see Setting the Parameters of a Study on page 302.

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Note In the **Study Editor**, you can also change the **Minimum** and **Maximum** values for each parameter and edit its **Description**. Click on the value of a column to make it editable.

If you want to use your custom studies in price pages, you should define a value for the **Time region for price pages** (bottom right of the dialog). In this field, you can either enter a constant value (number of bars), or an expression that is derived from the study's parameters. For example, for the *Moving Average Displaced*, the appropriate expression is `period+period_dis`. If you don't define a value here, the default value of 100 bars will be used in price pages.

- On the **Appearance** tab, choose into which pane you want to insert the study, and adapt colors, fonts and styles. For details about the possible settings, see Defining the Appearance of a Study on page 305.

Note In the Study Editor, one additional setting is available for areas, called **Percentage Mode**: This mode can be used to display an area with percentage values instead of absolute values, e.g. with the top border of an area at 75% and the bottom border at 25%. The border lines of areas in percentage mode are not influenced by changes in the vertical price scale, they will always cover the set percentage of the chart pane, regardless of the settings of the vertical price scale.

- Click **Save All** to save all changes.

Note If you want to only save the changes that you did to this study, without saving the changes that you did to other studies, click **Save** on the **File** menu of the **Study Editor**.

Editing Study Descriptions, Categories and Tags

For each study, TeleTrader provides a short description, groups it in one or more categories, and assigns tags. You can change the description to make your own notes about the study, add categories to a study or remove them from it, and assign your own tags to a study. The name of a study and its type (indicator, signal or function) can also be adapted.

You can mark a study as your favorite. Those studies will show up when you click the button **Favorites** in the **Insert Study** dialog.

All this is done in the **Study Editor**. On the **Tools** menu, click on **Study Editor** to display it.

To edit the description of a study

- In the study list on the left side, click on the study.

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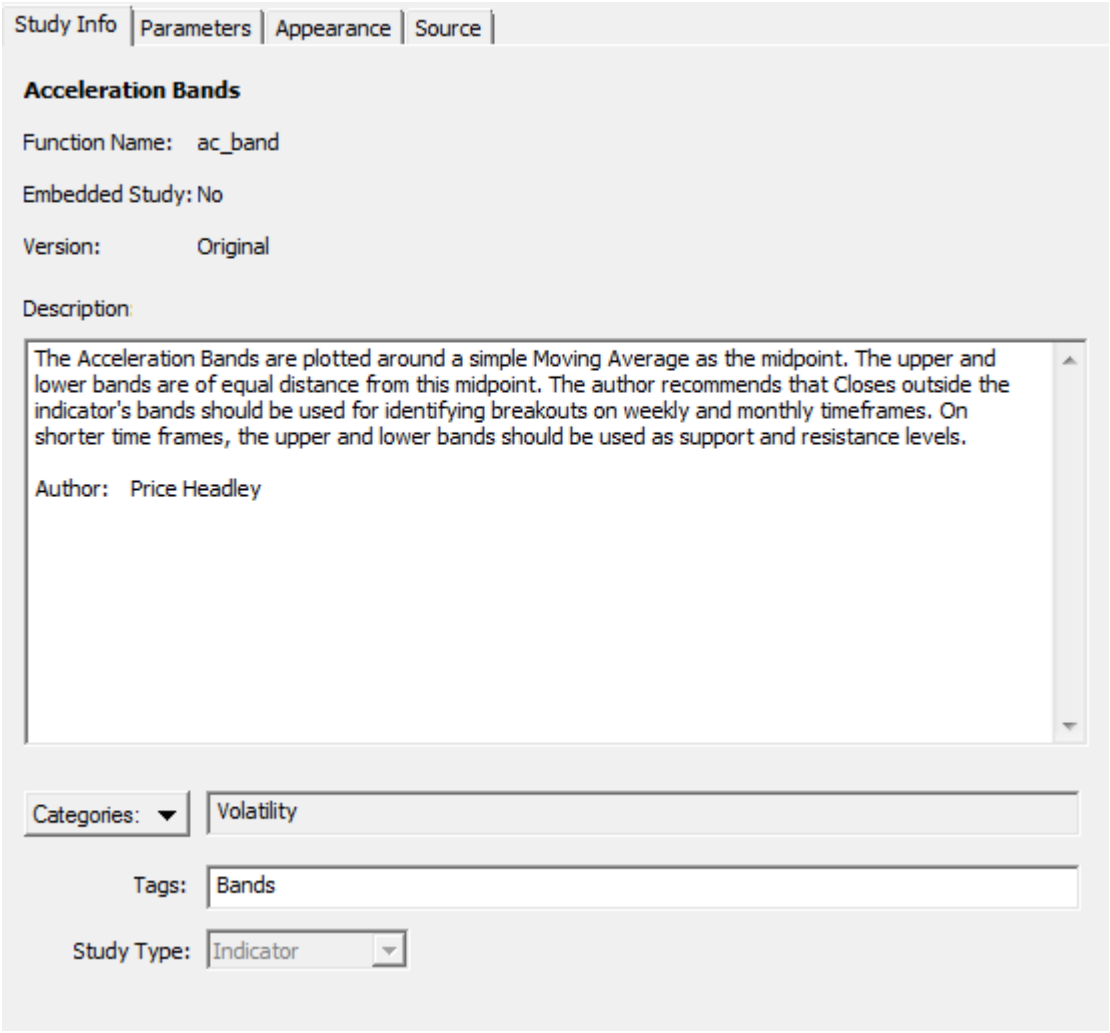
- On the **Study Info** tab, edit the content of the **Description** field.


Study Info
Parameters
Appearance
Source
Acceleration Bands
Function Name: ac_band
Embedded Study: No
Version: Original
Description
The Acceleration Bands are plotted around a simple Moving Average as the midpoint. The upper and lower bands are of equal distance from this midpoint. The author recommends that Closes outside the indicator's bands should be used for identifying breakouts on weekly and monthly timeframes. On shorter time frames, the upper and lower bands should be used as support and resistance levels.
Author: Price Headley
Categories:
Volatility
Tags:
Bands
Study Type:
Indicator

To add a category to a study

- In the study list on the left side, click on the study.
- On the **Study Info** tab, click on the **Categories** button and select the category that you want to add.

> **Note** All selected categories are highlighted with a check mark. Custom studies are automatically added to the category **Custom**.

To remove a category from a study

- In the study list on the left side, click on the study.
- On the **Study Info** tab, click on the **Categories** button and click on the category that you want to remove.

To edit the tags of a study

- In the study list on the left side, click on the study.

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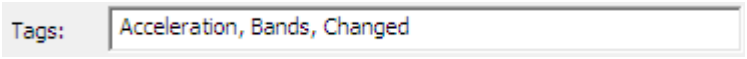
- On the **Study Info** tab, type additional tags in the **Tags** field. You can use free text for your tags. Separate each tag with a comma (**,**) or semicolon (**;**).



To mark a study as a favorite

- In the study list on the left side, right-click on the study and choose **Add to Favorites**.

To remove a study from your favorites

- In the study list on the left side, right-click on the study and choose **Remove from Favorites**.

To change the study type

> **Note** The study type can only be changed for custom studies that you have created yourself.

- In the study list on the left side, click on the study.
- On the **Study Info** tab, choose a different **Study Type** from the list:

Function	Internal function, which cannot be inserted on a chart or price page. This study type is only displayed on the **Functions** tab of the dialog.
Indicator	This study type is only displayed on the **Indicators** tab of the dialog.
Signal	This study type is only displayed on the **Signals** tab of the dialog.

To rename a study

> **Note** You can only rename custom studies that you have created yourself.

- In the study list on the left side, click on the study.
- On the **File** menu of the **Study Editor**, click on **Rename**.
- Enter a new name for the study and press the ENTER key.

To save your changes

- Click **Save All** to save all changes.

> **Note** A backup file of your custom studies named *UserStudies.bak* is created automatically as soon as you click **Save All**. If you want to only save the changes that you did to one study, without saving the changes that you did to other studies, click **File > Save** on the menu of the **Study Editor**.

Editing the Source Code of Studies

> **Note** You can only edit the source code of custom studies that you have created yourself. To change an original study, you can save a copy of the study under a different name (see below) and then adapt the source code of the copied study to your needs.

Some changes to a study can only be done by changing its source code on the **Source Code** tab of the **Study Editor**.

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In this section, you will only learn here how to use the **Study Editor** to edit a study. For more information about the TeleTrader Language, you can find in-depth explanations in different sections:

- If you are new to editing source code, we provide several examples with step-by-step instructions in the section Creating Custom Studies on page 460.
- If you are already familiar with the TeleTrader Language, you might still want to look up specific commands in the Language Reference on page 472.

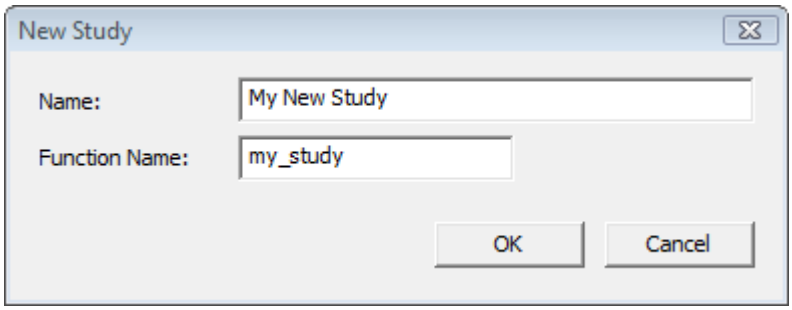
To edit the source code of a study

- On the **Tools** menu, click **Study Editor**.
- In the study list on the left side, click on the study.
- On the **Source Code** tab, change the code of the study. For step-by-step examples, see Creating Custom Studies on page 460.
- Click **Check Syntax** to check if the changes to the code are in compliance with the TeleTrader Language syntax.

> **Note** If the syntax is not correct, you can still save the study to finish working on it later. It is not recommended to try to use it in a chart or price page, though. For an overview of possible error messages, see Error Messages on page 531.

To save the copy of a study under a different name as a new study

- In the study list on the left side, click on the study.
- On the **File** menu of the **Study Editor** dialog, click **Save a Copy**.
- In the **Name** field, enter the name of the study as it should appear in the study list (for example in the **Insert Study** dialog).
- In the **Function Name** field, enter the name of the function used to calculate the study. Pay attention to the Naming Conventions on page 486.



To save all edited studies

- In the **Study Editor**, click **Save All**.

> **Note** A backup file of your custom studies named *UserStudies.bak* is created automatically as soon as you click **Save All**. If you want to only save the changes that you did to one study, without saving the changes that you did to other studies, click **Save** on the **File** menu of the **Study Editor**.

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Creating New Studies

You can create your own studies using the TeleTrader Language, which is an easy programming language designed especially for this purpose. When creating a new study, you have to enter the complete program code used for the calculation and drawing of your study.

You can find in-depth explanations about the TeleTrader Language in the following sections:

- If you are new to writing custom studies, we provide several examples with step-by-step instructions in the section Creating Custom Studies on page 460.
- If you are already familiar with the TeleTrader Language, you might still want to look up specific commands in the Language Reference on page 472.

To create a new study

- On the **Tools** menu, click on **Study Editor**.
- On the **File** menu of the **Study Editor**, click **New**.
- In the **Name** field, enter the name of the study as it should appear in the study list (for example in the **Insert Study** dialog).
- In the **Function Name** field, enter the name of the function that you will write to calculate the study. Pay attention to the Naming Conventions on page 486.
- Click **OK**. The **Source Code** tab of the new study is shown.
- Enter the source code for the new study. Refer to the Language Reference on page 472 for details.

To save the new study

- On the **File** menu of the **Study Editor**, click **Save**.

> **Note** All custom studies are saved in the file *UserStudies.xml*. This file is saved in the folder that is specified for **User Data** under **Tools > Options > File Locations**.

Deleting Custom Studies

You can of course delete a study that you have created yourself. The studies that are provided with Professional cannot be deleted – they can only be reverted (reset) to their original settings.

To delete (or revert) a study

- On the **Tools** menu, click on **Study Editor**.
- In the study list on the left side, click on the study that you want to delete.
- On the **File** menu of the dialog, click **Delete** for custom studies, or **Revert to Default** for studies provided by TeleTrader that have been changed.

Importing, Exporting and Sharing Studies

You can export studies and later import them into another TeleTrader Professional installation. This way, you can share your studies with other Professional users.

If you have created your own study, you might have invested a lot of time and research into writing the source code of this study. Perhaps you want to let others use the study that you created, but you do not want to let everyone see (or edit) the source code of your study. To prevent others from accessing the source code of your study, you have two possibilities:

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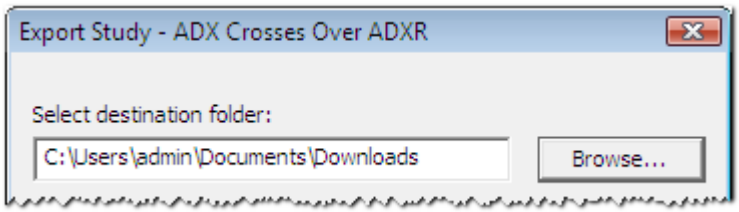
- You can *restrict the use* of the study to certain Professional users and additionally set a *time limit*. The chosen user can use the study for the time that you specify during export, but cannot see its source code.
- You can *protect it with a password*. Everyone who does not know the password can still use the study in a chart or price page and change its parameter values or appearance, but will be prompted to enter the password if he tries to access the source code.

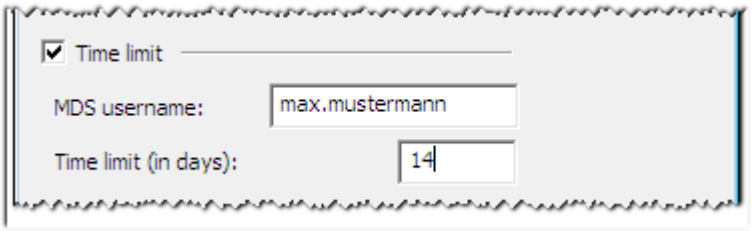
You can also send a study per e-mail to other Professional users from within the program. When sending e-mails from within Professional, you have to use your *default e-mail client*. To activate the default e-mail client in Professional, use the menu command **File > Send E-mail > Use Default E-Mail Client**. For details on sending e-mails with Professional, see Sending Workspaces, Virtual Pages or Documents via E-Mail on page 169.

To export a study

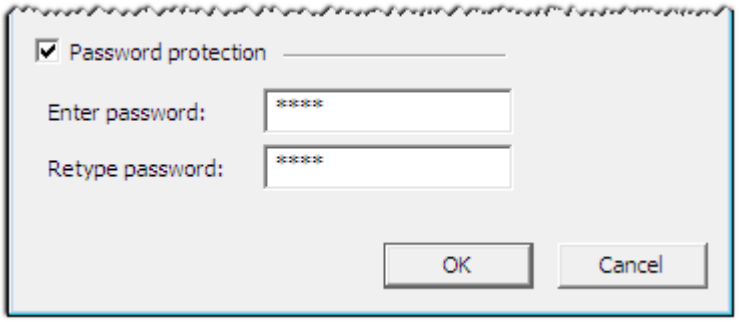
- On the **Tools** menu, click on **Study Editor**.
- In the study list on the left side, click on the study that you want to export.
- On the **File** menu of the **Study Editor**, click **Export**.
- In the **Export Study** dialog, click **Browse** to choose the destination folder for your study.



- If you want to restrict the use of the study to a certain Professional user for a chosen time period, select **Time limit**. Enter the **MDS user name** (this is identical to the Professional user name) that is allowed to use the study, and the **Time limit** in days that the user is allowed to do so.



- If you want to protect your study with a password instead, select **Password protection** and enter the password twice.



- Click **OK** to export the study.

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To import a study

> **Note** You can also import studies that where created with previous versions of TeleTrader Professional. Their source code will automatically be converted to the new syntax of the TeleTrader Language during the import process.

- On the **Tools** menu, click on **Study Editor**.
- On the **File** menu of the **Study Editor**, click **Import**.
- In the **Import Analysis Tools File** dialog, select the Professional study that you want to import.
- Click **Open**.

To send a study via e-mail

- On the **Tools** menu, click on **Study Editor**.
- In the study list on the left side, click on the study that you want to send via e-mail.
- On the **File** menu of the **Study Editor**, click **E-Mail Study**.
- A new e-mail message appears. Enter the e-mail address of the recipient(s) and click **Send**.

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Alerts (Notifications)

When you are monitoring a market, or the development of a security, you often look out for certain events, like a relevant news story, the breaking of a specific price level, a buy / sell signal or the intersection of the time series with a study or drawing object. With alerts, TeleTrader Professional can automatically notify you when certain events take place, and you can define the actions that are then automatically carried out by Professional (for example a sound signal, or the sending of an e-mail).

Alert types

There are five different types of alerts that you can use:

Price alerts	Notify you when the price of a symbol reaches a certain level. See Price Alerts on page 321.
News alerts	Notify you whenever a certain keyword or phrase shows up in an incoming news story. See News Alerts on page 325.
Time alerts	Notify you when a certain time is reached. See Time Alerts on page 326.
Intersection alerts	Notify you when two chart objects (for example time series, study, drawing object) cross. See Intersection Alerts on page 326.
Study alerts	Notify you when a new signal marker (for example a Buy or Sell signal or Candlestick pattern) appears on a chart. See Study Alerts on page 328.

For every alert, different settings can be made to define when it will be triggered. In addition, you can define which actions will be carried out once the trigger condition has been met.

Action types

After an alert has been triggered, at least one of these actions can be carried out:

Notification	Displays the Alert Event Notification window with a text message. See Notification Action on page 334.
E-mail	Sends an e-mail to the specified recipient(s). See E-Mail Action on page 335.
Sound	Plays a sound file or system speaker signal. See Sound Action on page 336.
(News) Display	Shows one or more documents on the screen. See Display Action on page 336. This action type is only available for price and news alerts.
Print	Prints one or more documents. See Print Action on page 337. This action type is only available for time alerts.

You can adapt every action type to your needs, for example choose what sound is played, or what document should be displayed.

Price Alerts

Price alerts can notify you when the price of a specific symbol reaches a certain level. You can insert a price alert directly in the **Alerts** window, or from a price page, chart or options matrix.

You can define the kind of price that triggers the alert (*Last*, *Open*, *High*, *Low*, *Close*, *Bid*, *Ask* etc.), the price level at which the alert will be triggered, and if the price should rise above or drop below this level to trigger the alert.

Additionally, you can choose between three types of price alerts:

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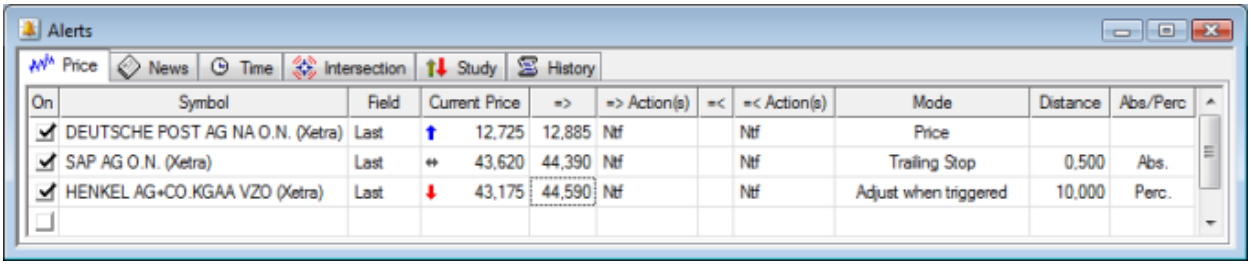
- **Price**: This is the "normal" price alert and the default setting. You will be notified when the current price reaches the trigger price that you defined, and the alert will be automatically deactivated after it has been triggered.
- **Trailing Stop**: The trigger price will follow the price movement at a pre-set distance (for example 2 points), as long as the price moves away from the price level defined in the alert. Once the symbol's price changes direction, the trigger price level will hold and the alert will be triggered and deactivated once it is hit.
- **Adjust when triggered**: Similar to normal price alerts, you will be notified when the current price reaches the defined trigger price. Then, the trigger price will be recalculated at a new level defined by a pre-set distance (for example 5% above the current price) and the alert will be active again.



On	Symbol	Field	Current Price	=>	=> Action(s)	=<	=< Action(s)	Mode	Distance	Abs/Perc
☑	DEUTSCHE POST AG NA O.N. (Xetra)	Last	12,725	12,885	Ntf		Ntf	Price		
☑	SAP AG O.N. (Xetra)	Last	43,620	44,390	Ntf		Ntf	Trailing Stop	0,500	Abs.
☑	HENKEL AG+CO.KGAA VZO (Xetra)	Last	43,175	44,590	Ntf		Ntf	Adjust when triggered	10,000	Perc.
☐										

Once a normal or trailing stop price alert has been triggered, it is automatically deactivated. The columns **=>** or **=<** of the price alert will then be shaded by default (you can also choose a custom color for triggered alerts):

=>
1,30000

The column **Time** shows the last date and time that a price alert has been triggered. You can also sort by that column, so that recently triggered alerts are displayed on top. To enable a deactivated price alert again, see Enabling, Disabling and Deleting Alerts on page 331.

To customize the visible columns, fonts, colors and update styles used for price alerts, see Customizing the Alerts Window for Price Alerts on page 329.

To insert a price alert in the Alerts window

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, click on the **Price** tab.
- Right-click on the last (empty) row of the alerts list and choose **Insert Symbols**.
- The **Symbol Search** dialog is displayed.
- Enter your search term in the first field on the left side and change the search settings, if necessary. For more information, see Searching for Securities in the Symbol Search Dialog on page 34.
- Click on the green button or press the ENTER key to start the search.
- Select the symbol for which you want to get a price alert.
- Click **OK**. The symbol is inserted into the **Alerts** window.
- In the column **Field**, choose the price field on which the alert should be triggered. By default, the **Last** price is used. The column **Current Price** will automatically display the updated value for this field.
- In the columns **=>** or **=<**, enter the trigger price for the alert:

=>	When the price for the chosen field of the symbol is *equal or greater than* this value, the alert will be triggered and the action(s) defined under **=> Action(s)** will be carried out.
=<	When the price for the chosen field of the symbol is *equal or smaller than* this value, the alert will be triggered and the action(s) defined under **=< Action(s)** will be carried out.

- To enter a trigger price, you can either:
  - Right-click in the column **=>** or **=<** and choose **Today's High/Low**, **Today's Open**, **Yesterday's High/Low** or **Yesterday's Close** as the trigger price.

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- Double-click in the column **=>** or **=<** and type a custom price.
- Click in the column **=>** or **=<**, type a percent sign % and enter the desired percentage that should be added to or subtracted from the current price level. The percentage will automatically be converted into a price. For example, if you enter 10% in the column **=>** and the current price is at 10, the **=>** trigger price will be set to 11.

Note To remove a set trigger price, right-click and choose **Clear**.

- In the columns **=> Action(s)** or **=< Action(s)**, define which action(s) will be carried out when the price alert is triggered. See Setting the Action on Triggering an Alert on page 332.
- In the column **Mode**, choose the type of price alert you want to create (for examples, see comparison below):

Price	Default setting. You will be notified when the current price reaches the trigger price that you defined. The alert will be automatically deactivated after it has been triggered.
Trailing Stop	The trigger price will follow the price movement at a pre-set distance as long as the price moves away from it. When the symbol's price changes direction, the trigger price level will hold. You will be notified when the current price reaches the trigger price. The alert will be automatically deactivated after it has been triggered.
Adjust when triggered	You will be notified when the current price reaches the trigger price that you defined. The trigger price will then be recalculated at a new level defined by a pre-set distance above/below the current price and the alert will be active again.

- For the types **Trailing Stop** and **Adjust when triggered**, enter the distance to the current price in the column **Distance**:
  - Double-click in the column **Distance** and type a custom value.
  - Right-click in the column **Distance** and choose **Use distance to upper trigger** or **Use distance to lower trigger** to automatically calculate the difference between the current price and the trigger price (upper trigger: column **=>**, lower trigger: column **=<**) and use this value as distance.
- In the column **Abs./Perc.**, choose whether the distance value should be interpreted as an absolute value (**Abs.**) or as a percentage (**Perc.**).
- In the columns **=> Note** or **=< Note**, add a note for this price alert. This text will also be used in notifications (see Notification Action on page 334).

To insert a price alert for a symbol in a price page

- Right-click on the symbol in the price page and choose **Insert Alert > Price Alert**.
- In the **Alerts** window, complete the price alert settings for this symbol (see above). If you have entered text in the column **Text** of the price page, it will be automatically copied to the columns **=> Note** and **=< Note** of the alert.

Note In the same way, you can also insert a price alert from the price page view of a time and sales document.

To insert a price alert for a symbol in a chart

- Position the mouse pointer on the chart at the price level where the price alert should be triggered.
- Right-click on the chart and choose **Insert > Price Alert**.
- In the **Alerts** window, complete the price alert settings for this symbol (see above).

To insert a price alert for a symbol in an options matrix

- Right-click on the symbol in the options matrix and choose **Insert Price Alert**.
- In the **Alerts** window, complete the price alert settings for this symbol (see above).

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Comparison of the different types of price alerts

To better understand the differences between normal **Price** alerts, **Trailing Stop** alerts and **Adjust when triggered**, the following table shows a comparison of their behavior regarding the trigger price and of what happens after they have been triggered.

Type of alert	Trigger price	After alert was triggered
Price	Never changes	Automatically deactivated
Trailing Stop	Follows the price when price moves away from the trigger price, not changed when price moves towards the trigger price	Automatically deactivated
Adjust when triggered	Does not change while alert is active, but is adjusted every time the alert is triggered	Trigger price is adjusted, and alert is activated again

The example below illustrates this different behavior. For this example, assume that the *current price* of the symbol for which you create the alert stands at 12 and the *initial upper trigger* in the column **=>** is set to 14 for all three alert types. For the **Trailing Stop** and **Adjust when triggered** alerts, the *distance* is set to 2 points.

Behavior of **Price** alerts:

- The trigger price will not change, no matter in which direction the price moves.
- When the current price rises to 14, the alert will be triggered and you will be notified.
- The upper trigger price will now be deactivated.

Behavior of **Trailing Stop** alerts:

- When the current price falls, the upper trigger price will follow the price movement at a distance of 2 points. For example, when the price falls to 10, the upper trigger price will be changed to 12.
- When the current price rises, the upper trigger price will hold. For example, when the price first falls to 10 and then rises to 11, the upper trigger price will stay at 12.
- When the current price continues to rise to 12, the alert will be triggered and you will be notified.
- The upper trigger price will now be deactivated.

Behavior of **Adjust when triggered** alerts:

- The trigger price will not change, no matter in which direction the price moves.
- When the current price rises to 14, the alert will be triggered and you will be notified.
- The upper trigger price will now be changed to 16, which is 2 points higher than the current price of 14, and the alert will be activated again.
- When the current price continues to rise to 16, the alert will be triggered again, and the trigger price will be adjusted once more.
- This type of alert is never deactivated, unless you disable it manually (see Enabling, Disabling and Deleting Alerts on page 331).

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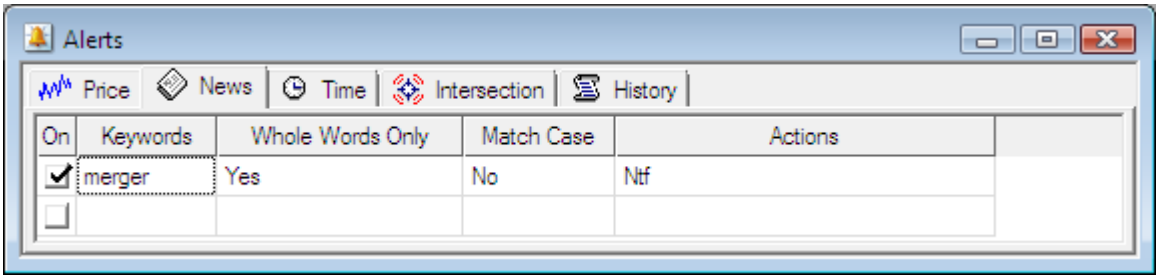
News Alerts

News alerts notify you whenever a specified keyword or phrase shows up in an incoming news story (either in the headline or in the text). You can insert a news alert directly in the **Alerts** window, from a price page or from a news document.



A news alert stays active also after it has been triggered, unless you define this otherwise in the display action settings (see Display Action on page 336).

To insert a news alert in the Alerts window

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, click on the **News** tab.
- Double-click on the field **Keywords**.
- Enter a keyword or a phrase that will trigger the news alert. When you want to use more than one keyword, separate them with a semicolon (**;**) or an ampersand (**&**). When you want to search for breaking news, enter ***** as the keyword.
- Press the ENTER key.
- In the column **Whole Words Only**, choose whether the alert should only be triggered for an exact match (**Yes**), or also if parts of the keyword are included in the news story (**No**).

> **Note** If you for example use the keyword "Profit", and the news story includes the word "Profits", the alert will not be triggered with the setting **Yes**. If you had used the setting **No**, the alert would also have been triggered for "Profits".

- In the column **Match Case**, choose whether the keyword is case-sensitive (**Yes**) or not (**No**).

> **Note** If you for example use the keyword "profit", and the news story includes the word "Profit", the alert will not be triggered with the setting **Yes**. If you had used the setting **No**, the alert would also have been triggered for "Profit".

- In the column **Actions**, define which action(s) will be carried out when the news alert is triggered. See Setting the Action on Triggering an Alert on page 332.
- In the column **Note**, add a note for this news alert. This text will also be used in notifications (see Notification Action on page 334).

To insert a news alert from a price page

- Right-click in the price page and choose **Insert Alert > News Alert**.
- In the **Alerts** window, complete the news alert settings (see above).

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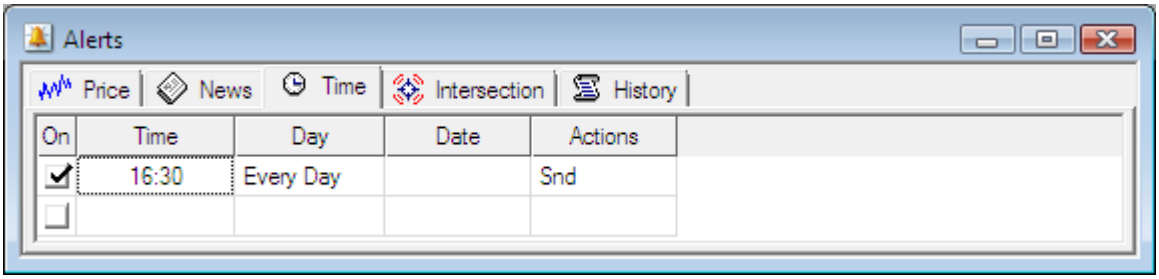
To insert a news alert from a news document

- Right-click on the news document and choose **Insert Alert**.
- In the **Alerts** window, complete the news alert settings (see above).

Time Alerts

Time alerts are triggered at a certain date and time. You can use them to notify you at the same time every day (or every weekday), or only use it once at a specific date. A time alert can also initiate a printout of certain documents at a specific time.



Time alerts stay active only if they are set to be triggered every day or weekday.

To insert a time alert in the Alerts window

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, click on the **Time** tab.
- Double-click on the field **Time**. The current time is inserted by default.
- Enter the time at which the alert will be triggered in the format *hh:mm*.
- Press the ENTER key.
- In the column **Day**, choose when the alert should be active:

Today	Alert will be triggered today and become inactive afterwards
Tomorrow	Alert will be triggered tomorrow and become inactive afterwards
Weekdays	Alert will be triggered every weekday (Monday through Friday)
Every Day	Alert will be triggered every day

- Alternatively, choose a date at which the alert should be triggered in the column **Date**.
- In the column **Actions**, define which action(s) will be carried out when the time alert is triggered. See Setting the Action on Triggering an Alert on page 332.
- In the column **Note**, add a note for this time alert. This text will also be used in notifications (see Notification Action on page 334).

Intersection Alerts

Intersection alerts will notify you when two chart objects that are in the same chart pane cross (intersect). You can for example define an intersection alert for the crossover of the time series with a trend line or with a study line, or when the trigger line of a study crosses its main line (for example MACD).

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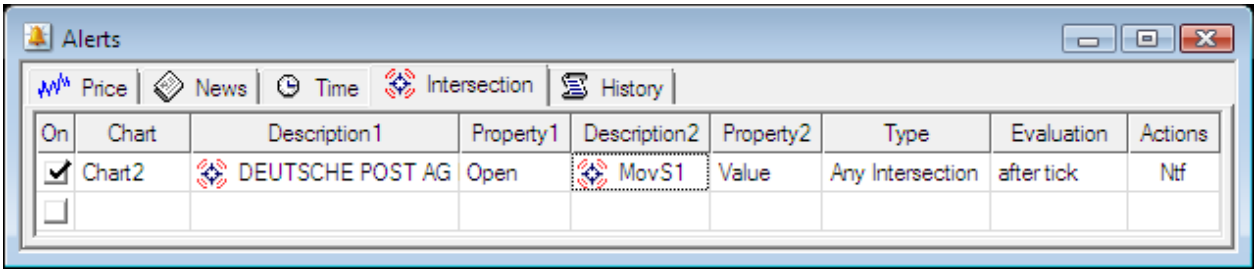
To create an intersection alert, a chart document with at least two chart objects must be open. You can insert an intersection alert directly in the **Alerts** window, or from the chart. An intersection alert is always connected with a specific chart document.



Intersection alerts stay active as long as the connected chart document stays open. When you close the chart document, or remove one of the chart objects that are used for the alert, the alert is automatically deleted.

Note You can however hide the chart by right-clicking on the alert and choosing **Hide Chart**. This will keep the chart window open in the background, but makes it invisible on the screen. Use **Show Chart** to make it visible again.

To insert an intersection alert in the Alerts window

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, click on the **Intersection** tab.
- Click in the column **Description1** and hold the mouse button down. The mouse pointer changes:

- While holding the mouse button down, move the pointer to the chart for which you want to insert the intersection alert. A floating information box is displayed on the chart.
- Move the mouse pointer to the first chart object that should trigger the intersection alert. The floating information box shows the name of this chart object, and the mouse pointer changes to a magnifying glass:

- Release the mouse button. The first chart object is added to the intersection alert.
- In the column **Property1**, choose the value of the chart object that should trigger the intersection alert. Depending on the type of chart object, the list will be different. For symbols, you can for example choose between the *Open*, *High*, *Low* and *Close* prices of the security, as well as the volume and open interest.
- Click in the column **Description2**, hold the mouse button down and choose the second chart object in the same way as described above.
- In the column **Property2**, choose the value of the second chart object that should trigger the alert.
- In the column **Type**, choose at which sort of intersection of the two chart objects the alert should be triggered:

Any Intersection	Alert is triggered at any intersection of the two chart objects
First > Second	Alert is triggered when the first object crosses the second object from below
First < Second	Alert is triggered when the first object crosses the second object from above

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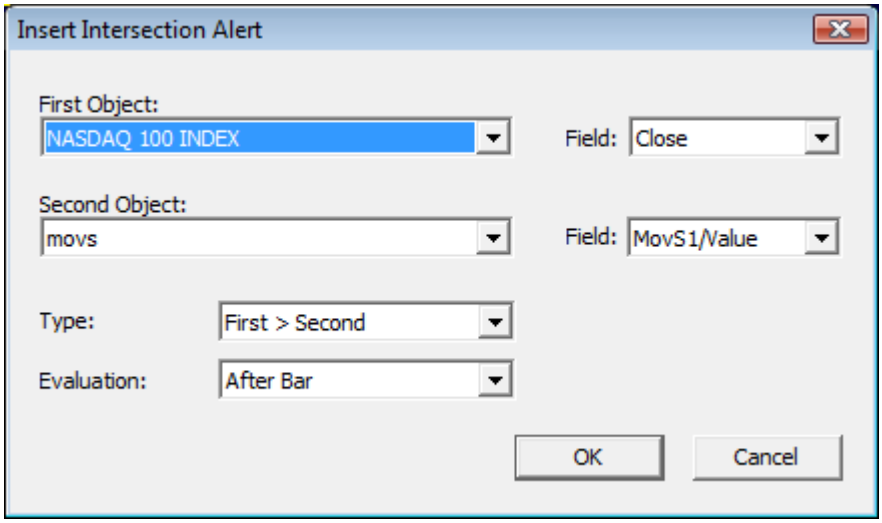
- In the column **Evaluation**, choose when the trigger conditions should be checked:

after tick	Trigger conditions will be evaluated after each tick
after bar	Trigger conditions will be evaluated when a bar is complete (depending on the data compression of the chart)

- In the column **Actions**, define which action(s) will be carried out when the intersection alert is triggered. See Setting the Action on Triggering an Alert on page 332.
- In the column **Note**, add a note for this intersection alert. This text will also be used in notifications (see Notification Action on page 334).

To insert an intersection alert from a chart

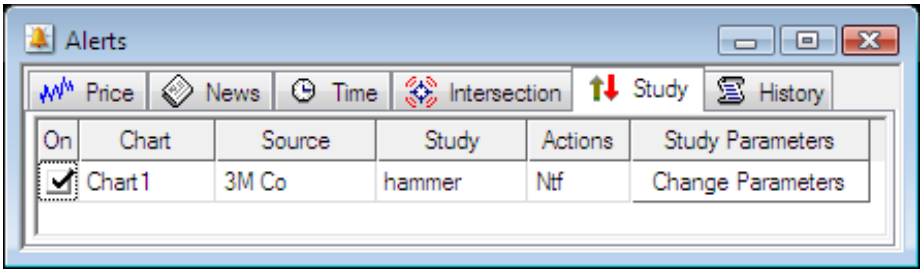
- Right-click on the chart and choose **Insert > Intersection Alert**.
- In the **Insert Intersection Alert** dialog, choose the first and second chart object from the list.
  This equals the settings **Description1** and **Description2** in the **Alerts** window.



- For each chart object, choose the **Field** (value) that should trigger the intersection alert.
  This equals the settings **Property1** and **Property2** in the **Alerts** window.
- Choose the **Type** and **Evaluation** options like described above.
- Click **OK**.
- The **Alerts** window appears. You can change the intersection alert settings if necessary (see above).

Study Alerts

Study alerts will notify you when a new signal marker (up / down arrow, for example *Buy* or *Sell* signal) appears on a chart. To create a study alert, a chart document with a study of the type **Signal** must be open. A study alert is always connected with a specific chart document.



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Study alerts stay active as long as the connected chart document stays open. When you close the chart document, or remove one of the chart objects that are used for the alert, the alert is automatically deleted.

> **Note** You can however hide the chart by right-clicking on the alert and choosing **Hide Chart**. This will keep the chart window open in the background, but makes it invisible on the screen. Use **Show Chart** to make it visible again.

To insert a study alert from a chart

- Right-click on the chart and choose **Insert > Study Alert**.
- The **Alerts** window with the new study alert appears. You can adapt the parameters of the study on which the alert is based by clicking **Change Parameters**.
- In the column **Actions**, define which action(s) will be carried out when the study alert is triggered. See Setting the Action on Triggering an Alert on page 332.
- In the column **Note**, add a note for this study alert. This text will also be used in notifications (see Notification Action on page 334).

To change the parameters of a study alert

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, click **Change Parameters** for the study alert that you want to adapt.
- In the **Chart Properties** dialog, adapt the parameter values of the connected study to your needs.

> **Note** The changed settings are also applied to the visible study on the chart.

Customizing the Alerts Window for Price Alerts

In the **Alert Properties** dialog, you can add and remove columns for price alerts, customize the font and colors of the **Price** tab, the appearance and color of the grid, and the update style of the *Current Price* column. You can also group price alerts by symbol.

> **Note** These settings currently apply only to the **Price** tab – other tabs (**News**, **Time**, **Intersection**, **Study** and **History**) are currently not affected by these settings.

To open the Alerts Properties dialog

- In the **Alerts** window, click on the **Price** tab.
- Right-click in on any price alert and select **Properties**.

To add columns to and remove them from the Price tab

- In the **Alert Properties** dialog, select **Columns**.
- Add and remove columns like you would in a price page. For details, see Adding and Removing Columns on page 80.
- You can also rearrange the columns by selecting a column in the **Displayed Columns** list and clicking **Move Up** or **Move Down**.

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To change the update style for the Current Price column

- In the **Alert Properties** dialog, select **Update**.
- In the **Update Notify** and **Movement** sections, select the desired update style. For details, see Changing the Update Style of a Column on page 83.

To change the grid style on the Price tab

- In the **Alert Properties** dialog, select **Grid**.
- Adapt the default settings to you needs. For details, see Changing the Grid Style on page 84.

To change font and colors on the Price tab

- In the **Alert Properties** dialog, select **Font**.
- Adapt the default settings to your needs:

Control	Description
Font	Type of font used for text on the **Price** tab
Font Style	Font style of the text (**Regular**, **Italic**, **Bold**, **Italic + Bold**)
Font Size	Size of the font used on the **Price** tab
Foreground	Basic color of the text
Background	Background color of the text
Triggered Alert Color	**Foreground** and **Background** colors of the cells in columns **=>** or **=<** after a nomal or trailing stop price alert has been triggered.

To sort the alerts on the Price tab

- Double-click the column header by which you want to sort. You can sort by any column except the **=< / => Action(s)** columns.

To group price alerts by symbol

- Right-click on any price alert and choose **Show groups**.
- If there are more than one price alerts for one symbol, those will now be grouped under a collapsible heading. All other symbols will be grouped under the heading **Other**.
- To collapse a group, click on the minus sign in the row header; to expand a group, click on the plus sign.
- To return to the normal view of price alerts, right-click on any price alert and choose **Hide groups**.

Opening Documents from the Alerts Window

Every alert (except time alerts) is either connected to a symbol or to a news story. You can open the connected symbol or news story from the **Alerts** window, or also from the **Alert Event Notification** windows (see Notification Action on page 334).

To open a document from the Alerts window

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, right-click on the alert for which you want to open a document.

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- Depending on the type of alert, you can open different document types:

Open >	Available for price alerts, intersection alerts and study alerts Choose the desired document type from the list. You can also use templates. See Opening Symbols from Existing Documents on page 66 for details.
Open News	Available for news alerts
Go To Chart	Available for intersection alerts and study alerts This command does not open a new chart, but only shows the connected chart window.

> **Note** For intersection alerts, you can also choose **Hide Chart**, which will keep the chart window open in the background, but makes it invisible on the screen. Use **Show Chart** to make it visible again.

Enabling, Disabling and Deleting Alerts

You can temporarily disable alerts (deactivate them), enable them again or delete them. Alerts that are disabled will not be triggered, even if their condition is met.

News alerts and some time alerts are disabled automatically after they have been triggered for the first time. You can enable them if you want to use them again. For price alerts, only the price that has triggered the alert is disabled automatically (except when the mode of the price alert is set to **Adjust when triggered**, see Price Alerts on page 321). The other price (when set) still stays active. You can enable / disable the two trigger prices (**=>** and **=<**) separately.

To disable an alert

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, remove the checkmark in the column **On** of the alert that you want to disable.

To enable an alert

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, place a checkmark in the column **On** of the alert that you want to enable.

To disable / enable trigger prices for price alerts

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, right-click on the column **=>** or **=<** and choose **Disable** (or **Enable**).

> **Note** If you disable one trigger price (for example the **=>** trigger), the other trigger price (for example **=<**) will stay active as long as you do not disable the whole price alert.

To delete an alert

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, right-click on the alert and choose **Delete Alert**.

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Viewing the Alerts History

The alerts history shows a list of all alerts that have been triggered in the past, regardless of which action was carried out after the trigger. The history is kept until you manually clear it.

To view the alerts history

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, click on the **History** tab.

To clear the alerts history

> **Note** *This action cannot be undone.* This will delete the entire alerts history.

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, click on the **History** tab.
- Right-click on the history list and choose **Delete All**.

> **Note** To clear individual events from the alerts history, right-click on the event and choose **Delete**.

Setting the Action on Triggering an Alert

You can define which action or actions will be carried out when an alert is triggered. By default, some actions are already connected with every alert type: For a example, a price alert could always be created with a notification and sound action, whereas an intersection alert could always be created with an e-mail action, etc.

For every alert on the list, you can define individual actions that only apply to this alert. You can also change the default actions that are associated with every new alert of this type (for example, for all newly created time alerts or intersection alerts).

To set the action(s) used when an alert is triggered

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, right-click on the alert for which you want to define the action(s) that will be carried out when the alert is triggered, and choose **Set Alert Actions**. (For price alerts, choose **Set => Actions** or **Set =< Actions**.) The **Alert Action Editor** appears.

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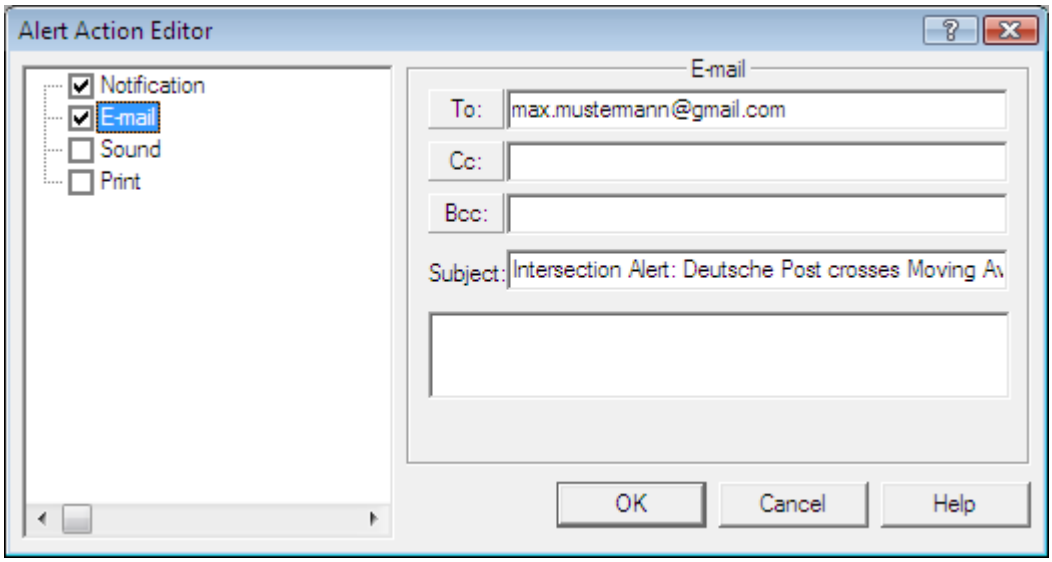

Note You can also double-click in the **Actions** column to open the **Alert Action Editor**.

- In the **Alert Action Editor**, select the action(s) that you want to use on the left side of the dialog by placing a check mark in front of every action that should be included.

Notification	Displays the Alert Event Notification window with a text message. See Notification Action on page 334
E-mail	Sends an e-mail to the specified recipient(s). See E-Mail Action on page 335
Sound	Plays a sound file or system speaker signal. See Sound Action on page 336
(News) Display	Shows one or more documents on the screen. See Display Action on page 336 This action type is only available for price, study and news alerts.
Print	Prints one or more documents. See Print Action on page 337 This action type is only available for time alerts.

- On the right side of the dialog, adapt the settings for this action to your needs.

To set the default action(s) for certain alert types

- On the **View** menu, click **Alerts**.
- In the **Alerts** window, click on the tab of the alert type for which you want to define the default action(s).
- Right-click on the alert list and choose **Set Default Actions**. (For price alerts, choose **Set => Default Actions** or **Set =< Default Actions**.)
- In the **Alert Action Editor**, adapt the default settings to your needs:
  - Select the default action(s) on the left side of the dialog by placing a check mark in front of every action that should be included by default.
  - Adapt the settings of each action to your needs.

Actions column

The actions that are currently associated with an alert are shown in the **Actions** column. For price alerts, there are two actions columns called **=> Action(s)** and **=< Action(s)**, which correspond to the **=>** and **=<** triggers respectively.

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You can assign the default actions to an alert (if they are not included already), or completely hide the **Actions** column in the alerts list.

All associated actions are displayed with their abbreviations:

Abbreviation	Action type
Ntf	Notification
Eml	E-Mail
Snd	Sound
Dsp	Display
NwsDsp	News Display
Prn	Print

To hide the Actions column

- In the **Alerts** window, right-click on the alert list and choose **Hide Alert Actions Columns**.

> **Note** If you later want to show the **Actions** column again, right-click and choose **Show Alert Actions Columns**.

To use the default actions for an alert

- In the **Alerts** window, right-click on the **Actions** column and choose **Insert Default Action**.

Notification Action

The notification action automatically displays the **Alert Event Notification** window when the alert is triggered. This windows is always shown on top of all other windows, even when TeleTrader Professional is minimized. It includes the time and date when the alert has been triggered, an icon to show the alert type, a description of the trigger events that led to the alert, and a pre-defined note that can be customized.

> **Note** The text that is entered in the column **Note** of any alert is automatically used as notification text. This works in both directions: Text that is entered for the notification action in the **Alert Action Editor** is automatically displayed in the column **Note**.

Alert Event Notification
Time
Alert
Note
15:07:35 24.02.2009
Last of EUR/USD Spot (Forex GTIS Basic FX) is above 1,27500
15:01:00 24.02.2009
Keywords(s) "merger" found in incoming story ... DGAP-News: SINGULUS TECHNOLOGIES: Merger of HamaTech AG into SINGULUS TECHNOLOGIES Becomes Effective with Entry on Commercial Register

To customize the notification window

- To change the background color of the notifications, right-click anywhere in the window and choose **Background color**.
- To change the text color of the notifications, right-click anywhere in the window and choose **Text color**.

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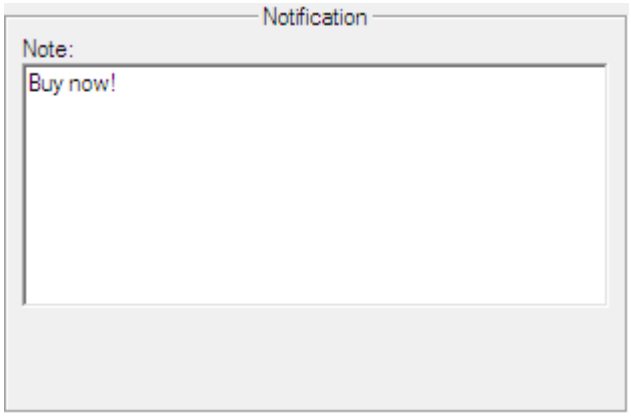
- To delete a notification from the window, right-click on the notification and choose **Delete**. The alert will still be visible in the alerts history.
- To open a document containing the symbol, double-click on the notification. The document type that is opened depends on the type of alert:

Price alert	Opens a price page
News alert	Opens a news document
Intersection alert	Opens the connected chart
Study alert	Opens the connected chart

To customize the notification action

- Open the **Alert Action Editor**, for example by double-clicking in the **Actions** column.
- On the left side of the dialog, select **Notification**.
- On the right side of the dialog, type additional text that should appear when the alert is triggered into the field **Note**.



E-Mail Action

The e-mail action automatically sends an e-mail message with a pre-defined text to the chosen recipient(s).

Note The e-mail settings must be configured in order to use this type of action. See E-Mail Settings on page 348.

To customize the e-mail action

- Open the **Alert Action Editor**, for example by double-clicking in the **Actions** column.
- On the left side of the dialog, select **E-mail**.
- On the right side of the dialog, enter the recipient(s) of the e-mail message into the fields **To**, **Cc** (carbon copy) or **Bcc** (blind carbon copy).

Note If you have defined an internal address book, click on the labels **To**, **Cc** or **Bcc** to access it. See also Using the Internal Address Book on page 170.

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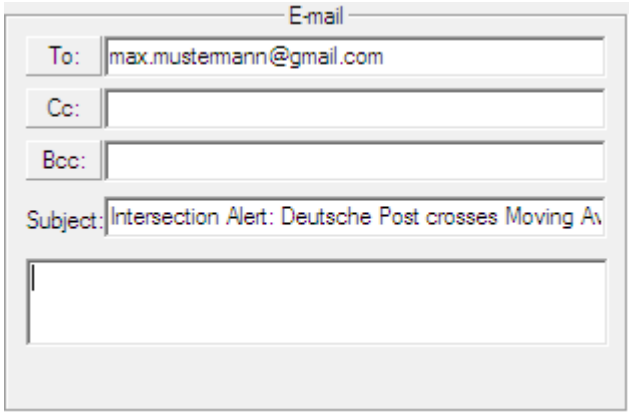
- Enter the **Subject** and the body text of the e-mail message.

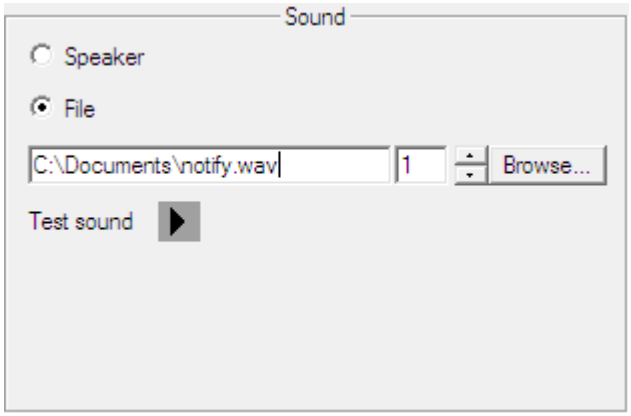


Sound Action

The sound action plays a sound file or a signal from the computer's system speaker when the alert has been triggered.

To customize the sound action

- Open the **Alert Action Editor**, for example by double-clicking in the **Actions** column.
- On the left side of the dialog, select **Sound**.
- On the right side of the dialog, choose whether you want to use the internal system speaker of your computer for the alert (**Speaker**), or play a sound file when the alert is triggered (**File**).
- If you chose **File**, click on **Browse** to find the sound file (*.wav* file) that should be played.
- Enter the number of times that the sound file will be played when the alert is triggered (the maximum is 20 times).
- You can test the sound action by clicking on the play button.



Display Action

The display action shows one or more documents when the alert is triggered. This action type is only available for price, study and news alerts.

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To customize the display action

- Open the **Alert Action Editor**, for example by double-clicking in the **Actions** column.
- On the left side of the dialog, select **Display** (or **News Display**).
- On the right side of the dialog, select the document that should be opened when the alert is triggered. Depending on the alert type, different options are available:

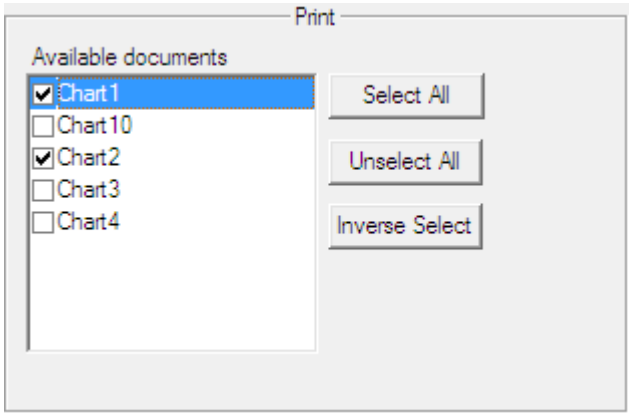
Alert type	Options	Description
Price alerts	**Chart**	Opens a new chart document containing the symbol
	Time & Sales	Opens a new time and sales document containing the symbol
	Price Page	Opens a new price page document containing the symbol
Study alerts	(No options available)	Shows the existing chart document that triggered the alert
News alerts	**Open news after triggering alert**	Opens the news document that triggered the alert
	Disable alert after triggering	Disables the alert after it has been triggered

Print Action

The print action automatically prints out one or more documents at a certain time. This action type is only available for time alerts.

To customize the print action

- Open the **Alert Action Editor**, for example by double-clicking in the **Actions** column.
- On the left side of the dialog, select **Print**.
- On the right side of the dialog, select the documents that should be printed when the alert is triggered from the **Available documents** list.
- You can use the buttons **Select All**, **Unselect All** or **Inverse Select** to select / deselect several documents at once.



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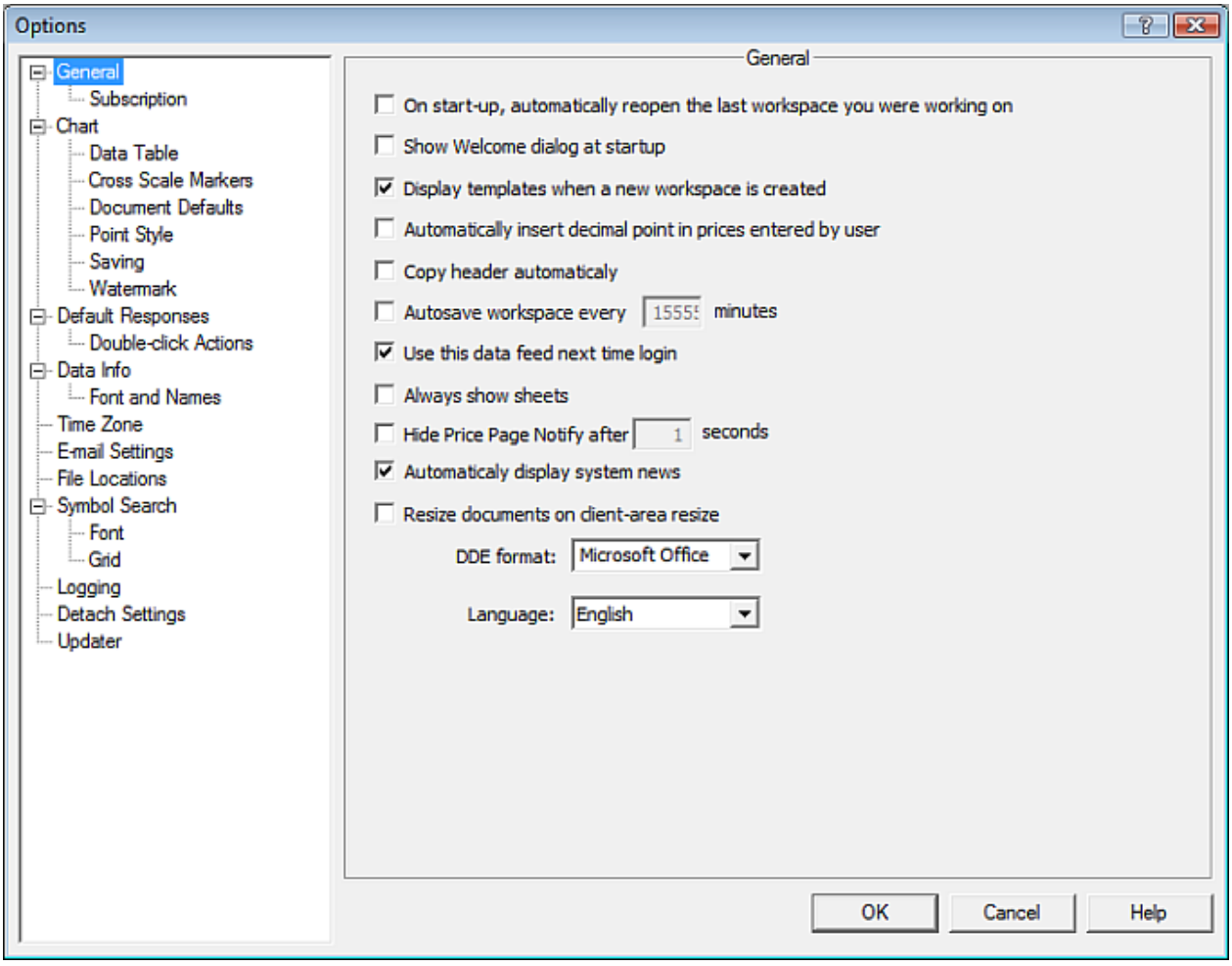
Global Settings and Options

You can change the general behavior of TeleTrader Professional for many features. As these settings apply to the whole program, and not just to one workspace or document, they are concentrated in one **Options** dialog.

In this section, you will also find an overview about the command elements that are used in TeleTrader Professional, namely keyboard shortcuts, toolbars and the status bar.

To display the Options dialog

- On the **Tools** menu, click **Options**.
- On the left side of the dialog, choose the appropriate options sheet. The option sheets are arranged hierarchically and displayed in several groups as a tree view.
- On the right side of the dialog, adapt the default settings to your needs.



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General Settings

On the **General** options sheet, you can find settings related to the start-up of TeleTrader Professional and miscellaneous other settings.

Setting	Description
On start-up, always open the default workspace	Check to open the default workspace on every start of Professional.
On start-up, automatically reopen the last workspace you were working on	Check to automatically open the workspace that you worked with last on every start of Professional.
Show Welcome dialog at startup	Check to automatically display the **Welcome** dialog on every start of Professional.
Show Workspace Information dialog if load time exceeds 30 seconds	Check to display the **Workspace Information** dialog with details about the contents of your workspace and optimizing tips whenever the load time for a workspace exceeds 30 seconds.
Display templates when a new workspace is created	Check to automatically display the **New Document** dialog whenever you create a new workspace.
Autosave workspace every x minutes	Check to automatically save all changes in the current workspace every few minutes. Enter the number of minutes (1 to 9999) between saves.
Use this data feed on next login	Clear to choose between working online and offline on the next start of Professional.
Always show sheets	Check to enable sheets in charts, price pages and time and sales documents.
Automatically display system news	Check to display system messages (recommended).
Automatically resize documents	Check to resize all documents in a Professional main window to an appropriate size when the main window is resized manually. See also Changing the Size of a Document Window on page 160.
Hibernate inactive chart documents after x seconds	Check to automatically hibernate chart documents that are not visible (inactive sheets, other virtual pages) after a number of seconds. Activating this settings can significantly improve the performance of TeleTrader Professional for workspaces that contain a large number of charts.
Use custom interest rate for calculating Greeks: x %	Check to use a custom interest rate for all options matrix documents (except for options matrix documents where an individual interest rate has been set in the Options Matrix Properties dialog). See also Customizing the Greeks View on page 130.
Use thousands separator	Check to show a thousands separator for large numbers (such as volume data).
Language	Choose the language for the Professional interface. *When you change the language, you will be asked to restart the application so that the change can take effect.*

Subscription Settings

On the **Subscription** options sheet, you can see which symbols you are subscribed to at the moment, and can add or remove symbols. Only subscribed symbols are updated automatically in your documents when new ticks arrive. You can also change the number of decimal places that are shown for a symbol in Professional documents.

If the maximum number of subscribed symbols is exceeded, all further symbols will be displayed on the screen, but you will receive no new data for them (they will show up as unsubscribed symbols).

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You can see how many symbols you are subscribed to at the moment in the subscription section of the status bar. The number will turn red when you have exceeded the maximum number of subscribed symbols: Double-click on the number to directly access this options sheet. See also Status Bar on page 361.

Note You are automatically subscribed to every symbol that you open in a document. Close some Professional documents (for example price pages) to automatically unsubscribe the symbols contained in these documents, or use the procedure described below to manually choose which symbols you want to unsubscribe.

To unsubscribe a symbol

- In the **Subscribed symbols** list, select the symbol that you want to unsubscribe.
- Click **Remove**. The symbol is moved to the **Unsubscribed symbols** list. It will still be displayed in your documents, but will not receive new data.

To re-subscribe to an unsubscribed symbol

- In the **Unsubscribed symbols** list, select the symbol that you want to subscribe to.
- Click **Add**. The symbol is moved to the **Subscribed symbols** list. It will now be updated again when new data arrives.

Note The button **Add** is only available when the number of simultaneously subscribed symbols (500 by default) has not been reached yet. Otherwise, you have to remove (unsubscribe) a symbol first, before you can subscribe to a new one.

To change the number of decimal places for a symbol

- In the symbols list, select the symbol for which you want to change the number of decimal places.
- Select **Use custom decimals**.
- Enter the number of decimal places that should be used for this symbol in all Professional documents.

Note To use the default number of decimal places for a symbol, clear the **Use custom decimals** check box.

Chart Settings

On the **Chart** options sheet, you can find settings related to chart documents and related tools (for example drawing tools).

Setting	Description
Use magnet function on Select and Crosshair	Check to use the **Snap** tool in combination with the **Select** and **Crosshair** tool. The crosshair will snap to the nearest price automatically.
Keep drawing tools active until the ESC key is pressed	Check to keep a drawing tool active after you have used it until you press the Esc key or select another drawing tool. Clear to deactivate the drawing tool automatically after it has been used. This setting does not apply to the **Pivot Points**, **Vertical Lines** and **Data Cut** tools.
Show tooltips on chart	Check to display the *Close* price of a bar or candle as a tooltip when positioning the mouse pointer over the bar.

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Use mouse wheel for changing vertical scale range	Check to activate expanding and compressing the time series (show less / more data points on the screen) by turning the mouse wheel.
Use auto enlarge for bars in zoom in/out operation	Check to automatically adjust the width of the bars when zooming in and out of a selection.
Use middle button to close pane	Check to activate closing a chart pane by clicking on it with the middle button (or wheel) of your mouse.
Use only one Color for charts	Check to use only one color for all chart types. Clear to color-code price relations, intervals or trends in most chart types.
Use only one Color for Line charts	Check to use only one color for **Line** and **Stair Step** charts. Clear to color-code price relations, intervals or trends in these chart types.
Activate study color inheritance on overlaid charts	Check to use color of the base symbol for inserted studies.
Insert the same studies in the same pane	Check to plot the same study in the same pane with previous study.
Automatically detect best line type for symbol. Check last x bars	Check to let Professional automatically determine which **Financial** chart type to use for a symbol, depending on the data of the last several bars (data points). Enter the number of bars that should be checked. **Line** charts will be used automatically when the last bars of the symbol have equal *Open*, *High*, *Low* and *Close* prices (for example only updated once per day).
Default picture format	Choose the default file format when sending a chart via e-mail as a picture file.
Use arrow keys (Up and Down) for navigating through linked charts	Check to use the Up and Down keys for navigating through linked charts. Clear to use the Up and Down keys for expanding and compressing the time series (show less / more data points on the screen).
Use Page Up and Page Down keys for scrolling the chart horizontally	Check to use the Page Up / Down keys to move the chart content horizontally. Clear to use the Page Up / Down keys to move the chart content vertically.
Use arrow keys (Left or Right) for activating the Vertical Line	Check to use the Left and Right keys for activating the Vertical Line tool. Clear to use the Left and Right keys for moving the chart content horizontally without activating the Vertical Line tool.

Data Table Settings

On the **Data Table** options sheet, you can change the appearance of the data table. See also Displaying the Data Table View on page 214.

Control	Description
Visible bars	This section contains the settings for visible data rows, that are also displayed in the chart. By default, all data rows are visible.
Background	Background color of visible data rows
Foreground	Color of the text in visible data rows
Font	Type of font used for visible data rows

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Font size	Size of the font used for visible data rows
Bold	Check to use a bold style for the text in visible data rows
Italic	Check to use an italic style for the text in visible data rows
Hidden bars	This section contains the settings for hidden data rows (data that has been marked as hidden and will not be displayed in the chart).
Background	Background color of hidden data rows
Foreground	Color of the text in hidden data rows
Font	Type of font used for hidden data rows
Font size	Size of the font used for hidden data rows
Bold	Check to use a bold style for the text in hidden data rows
Italic	Check to use an italic style for the text in hidden data rows
Display Grid	Check to display vertical and horizontal lines to separate data rows and columns. The grid lines will have the same color as the text of visible data rows.
Synchronize with Crosshair	Check to automatically jump to the corresponding row in the data table when clicking on a data point in the chart.

Cross Scale Marker Settings

On the **Cross Scale Markers** options sheet, you can change the appearance of the markers that are shown on the time and price scales of charts when using the **Select** or **Crosshair** tool. See also Reading Values from a Chart on page 212.

Control	Description
Show Marker on Vertical Scale	Check to display a rectangular marker showing the price on the price scale
Transparency level	Transparency of the price marker in percent (0% = solid)
Show Marker on Horizontal Scale	Check to display a rectangular marker showing the date/time on the time scale
Transparency level	Transparency of the time marker in percent (0% = solid)

Document Defaults Settings

On the **Document Defaults** options sheet, you can define a default size for new chart documents, and either use this size for all new chart documents, or apply the settings to all currently open chart documents.

Control	Description
Change the color of the last bar as new ticks come in	Check to change the color of the last bar, candlestick or data point, depending on the last tick (rising or falling prices).
Manually define chart size	Check to always use the default chart size defined below when opening a new chart document
Width	Enter the default width for chart windows in pixel
Height	Enter the default height for chart windows in pixel
Reset All	Click to reset all open chart documents to the size defined above

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Point Style Settings

On the **Point Style** options sheet, you can define the colors used for reference points, extension points and visibility points. You can either use the same colors as are used for the corresponding drawing tool, or define a default color for each point.

For more information about reference points, extensions points and visibility points, see Adding Drawing Objects to a Chart on page 244, Extending and Shortening Lines with Extension Points on page 271 and Hiding and Showing Lines / Levels with Visibility Points on page 296.

Control	Description
Reference points	In this section, you can define the colors that are used for all reference points
Outline color	Color of the borders of all reference points
Fill color	Color of the body of all reference points
Extension points	In this section, you can define the colors that are used for all extension points
Outline color	Color of the borders of all extension points
Fill color	Color of the body of all extension points
Transparent	Check to use a transparent body for extension points (no color)
Visibility points	In this section, you can define the colors that are used for all visibility points
Outline color	Color of the borders of all visibility points
Fill color	Color of the body of all visibility points
Use line color from chart properties	Check to always use the line color of the corresponding drawing tool instead of the color defined here

Saving Settings

On the **Saving** options sheet, you can enable the **Save all Charts** command to simultaneously save all open chart documents as picture files and/or Professional chart documents. You have to enter a path where the files should be saved, and define a default file name.

Control	Description
Enable 'Save all Charts' function	Check to enable the command **Save all Charts** on the **File** menu
Save as Picture file	Check to automatically save all charts as picture files when using **File > Document > Save all Charts**. Choose the picture file format that you want to use.
Path	Enter the file location (path) where the picture files should be saved automatically.
Save as chart document	Check to automatically save all charts as Professional documents when using **File > Document > Save all Charts**.
Path	Enter the file location (path) where the chart documents should be saved automatically.
Filename	Enter the filename that should be used for both the chart picture files and chart documents. You have to use the placeholders that are shown below the field. For example: `MyChart_%T_%YYYY` will save a file as *MyChart_FLU_2009.nch* and/or *MyChart_FLU_2009.gif*

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Watermark Settings

On the **Watermark** options sheet, you can define a custom watermark that will be used on all charts that you save as a picture file, copy to the clipboard or send via e-mail. By default, the TeleTrader logo is used as a watermark.

Control	Description
Show watermark	Check to show a custom watermark on all charts that are saved as picture files. Clear to use the TeleTrader logo as a watermark.
File name	Enter the file location and name of the picture file that should be used as watermark.
Position X	Enter the horizontal position of the watermark on the chart picture in pixels measured from the left border.
Position Y	Enter the vertical position of the watermark on the chart picture in pixels measured from the top border.
Opacity	Opacity of the watermark (left position = transparent, right position = solid)

Price Page Settings

On the **Price Page** options sheet, you can find general settings related to price page documents.

Price Page Options	
Show number of advancing/declining symbols in captions and headers	Check to display the total number of advancing (+), declining (-) and unchanged (=) symbols for a header group and for the current sheet.
Copy header automatically	Check to include the column headings when copying data from a price page to a spreadsheet software (e.g. Microsoft Excel).
Hide Price Page Notify after x seconds	Check to fade out the update style **Color background** after a few seconds (flash effect). Enter the number of seconds that the effect should be visible.
Insert existing studies when opening chart from price page	Check to include all studies already visible in a price page, when opening a new chart
DDE/RTD format	Choose if you want to use Microsoft Office RTD, Microsoft Office DDE or OpenOffice.org DDE to connect to your spreadsheet software. See also RTD – Retrieving Real-Time Data with Excel on page 364.

News Flash Settings

On the **News Flash** options sheet, you can configure how long a news flash is active on a price page, specify the colors used and choose whether to color the entire row of a symbol for a few seconds whenever a news story arrives.

News Flash Button Coloring	
The **News Flash** button is colored differently according to the age of the related news stories for a symbol. Every color is used for a certain time period after a news story arrives.	
New	If selected, this color is used for recent news stories (for example 1 minute old). Choose a color and how long it will be valid after a news story has arrived.
Active	If selected, this color is used for active news stories (for example 1 hour old). Choose a color and how long it will be valid after a news story has arrived.
Old	If selected, this color is used for old news stories (for example 1 day old).

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Choose a color and how long it will be valid after a news story has arrived.

News Flash Options	
Color row background for x seconds	If selected, the entire row of a symbol is colored for a few seconds whenever a news story arrives. Choose the number of seconds that the news flash will be active and the color used.
Use News Flash properties for Headline column	If selected, the color settings for the **News Flash** button are also used for the **News Headline** column.

Aribtrage List Settings

On the **Arbitrage List** options sheet, you can configure which exchanges are visible when opening a new arbitrage list and in what order they are shown. See also Opening Related Symbols in a Price Page on page 71.

To add an exchange to favorite exchanges

- Select the exchange that you want to add in the **Available Exchanges** list.
- Click the **>>** button. The chosen exchange is now moved to the **Favorite Exchanges** list.

To remove an exchange from favorite exchanges

- Select the exchange you want to remove in the **Favorite Exchanges** list.
- Click the **<<** button. The chosen exchange is now moved to the **Available Exchanges** list.

To change the order of favorite exchanges

- Select an exchange in the **Favorite Exchanges** list.
- Click **Move Up** or **Move Down** to change the exchange's place in the list.

To show only favorite exchanges in arbitrage lists

- Select the option **Show only favorite exchanges in arbitrage lists**. When opening a new arbitrage list (see Opening Related Symbols in a Price Page on page 71), only exchanges that are on your **Favorite Exchanges** list will be shown in the newly opened arbitrage list.

VWAP Settings

On the **VWAP** options sheet, you can set the default type of VWAP columns when inserting them into a price page and choose the status colors for the V-Button. See also Adding, Removing and Customizing the VWAP Columns on page 98.

Control	Description
Active Row	Color of the V-Button if VWAP values are active. The values are updated constantly as new ticks come in.
Period <> Current Date	Color of the V-Button if the entire time period chosen for VWAP is before or after the current date. The values will not be updated.
Frozen Row	Color of the V-Button if the calculation of VWAP values is temporarily frozen for this row.
Show	Check the VWAP type(s) that you want to use as the default type when inserting the VWAP columns on a price page. You can choose more than one type – the symbols (rows) of

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	a price page will then be duplicated for each type on inserting VWAP columns. Change the order of multiple VWAP types by using the **Move Up** / **Move Down** buttons.

Quick Quote Settings

On the **Quick Quote** options sheet, you can define what template is used for the different symbol types (Stock, Index, Future...). You have to first choose the symbol type from the list above, and then select the template that should be used for this symbol type. For example, you could show different fields for a stock symbol than you would for a futures symbol.

Control	Description
Security	Choose the symbol type for which you want to view / change the template settings.
Use	Select the quick quote template that should be used for the chosen symbol type. You can of course use the same template for different symbol types if you want.

Default Responses Settings

On the **Default Responses** options sheet, you can:

- Reset the saved default responses to questions such as automatically saving a workspace when closing it. For example, when you close a workspace for the first time, Professional will ask you if you want to save the changes made to it. If you always want to save all changes, select the check box **Don't ask this question again** and click **Yes**. If you always want to discard all changes, click **No**. Professional won't ask again and simply save (or discard) all changes to a workspace when you close it. If you later want to change this setting, you can reset this question so that it will appear again the next time you close a workspace and give you the opportunity to make a new decision.
- Change which default document is used when opening single symbols from the QuickBar. See Opening Symbols from the QuickBar on page 31.

Control	Description
Prompt	Clear the check box in front of the appropriate prompt to reset this default response. The associated question dialog will appear again the next time this action is carried out.
QuickBar	Choose the document type that should be opened when you open a single symbol from the QuickBar.

Double-Click Actions Settings

On the **Double-Click Actions** options sheet, you can define what document is opened when you double-click on a symbol. You have to first choose the document where you perform the double-click in on the left, and then select the document that should be opened on the right. For example, you could always open a company profile when double-clicking on a symbol in a price page.

Control	Description
Double-click in document	Choose the document where you want to view / change the double-click settings (source of the double-click).
Open Document	Select the document or action that should be opened when you double-click a symbol in the document chosen on the left

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	(target of the double-click). The entry **Link** that is additionally available for price pages and watch lists means that when double-clicking a symbol in the price page / watch list, the symbol will be displayed in already linked documents (instead of opening a new document).

Data Info Settings

On the **Data Info** options sheet, you can change the appearance of the **Data Info** box. See also Reading Values from a Chart on page 212.

Control	Description
Background Color	Choose the background color settings for the **Data Info** box.
Same as Chart	Select to use the background color of the chart pane.
Use this color	Select to choose a custom color as background color.
Transparency	Transparency of the **Data Info** box background.
Foreground Color	Choose the foreground color (text color) settings for the **Data Info** box.
Use symbol header color for symbol name	Check to use the color of the symbol header for the symbol name displayed in **Data Info** box.
Same as Chart	Select to use white (color of the chart crosshair) as the text color.
Use this color	Select to choose a custom color as foreground color.
Show Drawing Tools	Check to show values for drawing objects in the **Data Info** box. From the list below, choose the elements (drawing tools) which should be shown.
Show Time Series	Check to show values for the time series (symbols) in the **Data Info** box. From the list below, choose the elements which should be shown.
Show Studies	Check to show values for studies in the **Data Info** box.
Show values for hidden objects	Check to also show the values of hidden objects in the **Data Info** box.
Use line color in Data Info Window	Check to show all values for studies and drawing objects in the **Data Info** box with the same color as the object they refer to.
Only show "Close" when Line Chart or Stair Step Chart or Point Chart is selected	Check to show only Close price in the **Data Info** box when Line Chart, Stair Step Chart or Point Chart is selected (instead of displaying Open, High, Low, Close and Volume).

Font and Names Settings

On the **Font and Name** options sheet, you can change the appearance of the text inside the **Data Info** box. See also Reading Values from a Chart on page 212.

Control	Description
Font	Type of font used for the text of the **Data Info** box.
Font size	Size of the font used for the text.
Use object's short name	Check to use a shortened version of the names of all drawing objects in the **Data Info** box. Clear to use the full name of all drawing objects in the **Data**

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	Info box.
Auto Size	Select to automatically shorten the names of all drawing objects.
Number of character(s)	Select to enter a maximum number of characters that should be used for the names of all drawing objects (excess characters are cut).

Time Zone Settings

On the **Time Zone** options sheet, you can choose which time zone should be used for all time values that are displayed in charts, price pages, news documents, etc.

> **Note** Trading sessions for a time series in charts are always *defined* in exchange time, but *displayed* with the time zone settings that you choose here. See also Changing the Amount of Data Displayed in the Chart on page 217.

Control	Description
Local Time	Select to use the local time of your computer for all time values.
GMT	Select to use Greenwich Mean Time for all time values.
Exchange Time	Select to use the local time of the exchange for all documents except news. For news, the local time of your computer is used.
Custom Time	Select to use a custom time in increments or decrements of 30 minutes from GMT for all time values.

> **Note** You can also configure this setting by clicking on the time zone section of the status bar and choosing the time zone. See also Status Bar on page 361.

E-Mail Settings

On the **E-Mail Settings** options sheet, you can configure the built-in e-mail client with an existing e-mail account. You can use these settings to send chart pictures, Professional documents, virtual pages, workspaces and alert notifications from within Professional. Except for alert notifications, you can also use your default e-mail client instead (see Sending Workspaces, Virtual Pages or Documents via E-Mail on page 169).

The internal e-mail client uses an internal address book. You can export this address book as a file to use it in other programs. For further information about using the address book, see Using the Internal Address Book on page 170.

> **Note** You can also open this options sheet by clicking on the e-mail section of the status bar and choosing **Configure mail**. See also Status Bar on page 361.

To configure the internal e-mail account

- Choose your **E-Mail Service Provider** from the list on top, or choose **User Defined Provider** if you do not find your provider in the list.
- Complete the e-mail settings as shown below:

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Your Name	Enter your name as you want it to show up in the sender information.
E-mail Address	Enter your full e-mail address.
Outgoing mail Server (SMTP)	Enter the address of the outgoing mail server.
Port	Enter the port of the outgoing mail server (default: 25).
This server requires an encrypted connection (SSL)	Check to establish the connection to the mail server using an encrypted connection.
Log on to SMTP server	Check to remember the user name and password and send new e-mail automatically.
User Name	Enter the user name for your mail account.
Password	Enter the password for your mail account.

Note If you do not know your SMTP settings, please contact your network administrator or your Internet Service Provider (ISP). The support team will not know your SMTP settings.

To export the internal e-mail address book

- Click **Export address book**.
- In the **Export TeleTrader Professional Address Book** dialog, enter a name for the export file in the **File name** field.
- In the **Save as type** field, choose **Comma separated values (*.csv)** or **Text files (*.txt)**.
- Click **Save**.

File Locations Settings

On the **File Locations** options sheet, you can change the default file locations for different files (for example workspaces or log files).

Warning It is strongly recommended to keep the pre-defined file locations.

To change a default file location

- Select the file location that you want to change and click **Modify**.

Local Base	Default location for all external data.
Documents	Default location of all saved documents and workspaces. See also Creating and Saving Documents on page 159.
Templates	Default location of all saved templates. See also Saving your Preferences in Templates on page 145.
User Data	Default location for all user-specific data, including custom studies that are saved in the file *UserStudies.xml*.
Log Files	Default location for all log files. See also Logging Settings on page 351. *When you change this file location, you will be asked to restart the application so that the change can take effect.*
Virtual Pages	Default location for all virtual pages files. See Opening and Saving Virtual Pages on page 157.

- In the **Browse for Folder** dialog, choose the new file location and click **OK**.

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To change back to the pre-defined file locations

- Click **Reset to default**.

Symbol Search Settings

On the **Symbol Search** options sheet, you can find settings related to the behavior of symbol search. See also Symbol Search on page 32.

You can also open the Symbol Search settings by right-clicking in the search results and choosing **Properties**, or by clicking **Open > Settings** in the Symbol Search dialog.

Control	Description
Open Price Page after Toolbar search	Check to open the search results in a price page when starting a search from the **Symbol Search** toolbar Clear to open the search results in the **Symbol Search** dialog when starting a search from the toolbar
Open document for single results after Toolbar search	Check to open a single search result in a specific document type when starting a search from the **Symbol Search** toolbar (This means that you can for example open multiple search results in a price page – see above setting – , but single search results in a chart) Clear to open the search result in the **Symbol Search** dialog when starting a search from the toolbar
Close Symbol Search window after opening a document	Check to close the **Symbol Search** dialog after opening a document from it
Smart Symbol Search separator	Customize the Smart Symbol Search separators: See Smart Symbol Search on page 42
Show Search Term, Exchange, Type and Field selection	Select to show the fields **Search Term**, **Exchanges**, **Types** and **Fields** on the **Symbol Search** toolbar
Show Search Term and predefined Search Settings	Select to show the fields **Search Term** and **Search Settings** on the **Symbol Search** toolbar
Show results using different colors per security	Check to choose a different color for every symbol type: Click on the symbol type on the left, and then choose the color for this symbol type on the right.

Font Settings

On the **Font** options sheet, you can change the appearance and color of the text inside the **Symbol Search** results. See also Symbol Search on page 32.

Control	Description
Font	Type of font used for the text in search results
Font size	Size of the font used for the text in search results
Foreground	Color of the text in search results
Background	Basic background color of the search results – this color is only used when the **Symbol Search** setting **Show results using different colors per security** is disabled
Bold	Check to apply a bold font to all text in search results
Italic	Check to apply an italic font to all text in search results

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Grid Settings

On the **Grid** options sheet, you can change the appearance and color of the grid inside the **Symbol Search** results. The grid consists of horizontal and vertical lines that show the borders between rows and columns. See also Symbol Search on page 32.

Control	Description
Horizontal	Check to display horizontal grid lines between rows
Vertical	Check to display vertical grid lines between columns
Style	Line style of all visible grid lines
Color	Color of all visible grid lines

Logging Settings

On the **Logging** options sheet, you can adjust the logging level for individual TeleTrader Professional components. The log files are stored in their default file location: See File Locations Settings on page 349.

> **Warning** It is strongly recommended to keep the default logging settings.

To adjust the logging level for Professional components

- Choose the component that you want to adjust from the **Component** list.
- Adjust the logging settings for this component to your needs:

Setting	Description
Enable logging	Check to enable logging for this component
Level	Choose the logging level for this component
Number of logfiles to keep	Enter the number of old log files that should be kept
New file per day	Select to create a new log file each day
New file when size is reached (KB)	Select to create a new log file as soon as the size of the old log file exceeds the size set here (in KB)

To use the default logging settings for all levels

- Click **Reset to default**.

Detach Settings

On the **Detach** options sheet, you can control the behavior of detached windows. Detached or free floating windows can be positioned on the screen independent of the Professional main window. See also Arranging Document Windows on the Screen on page 162 and Multi-Monitor Systems on page 171.

Setting	Description
Display Portfolio and OrderBook always detached	Check to always display the **Portfolio** and **OrderBook** windows as detached windows. This setting is only used in combination with the trading integration.
Create all new documents as detached windows	Check to create all new Professional documents as detached windows.
Create new Quick Quote documents as	Check to create only new quick quote documents as

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detached	detached windows.
Show toolbars when creating detached windows	Check to show all appropriate toolbars in detached document windows.
Hide Navigation Pane when opening a new TeleTrader Professional	Check to automatically hide the navigation pane when creating a new Professional main window.

Updater Settings

On the **Updater** options sheet, you can change the update interval that Professional uses to automatically check for updates. See also Updates on page 453.

Control	Description
On each start	Select to check for updates on every start of the program.
Weekly	Select to check for updates every week.
Monthly	Select to check for updates every month.
Every 3 months	Select to check for updates every quarter year.

Shortcuts

Many commands in TeleTrader Professional can also be called up with a keyboard shortcut.

Shortcut	Description
F1	Opens the TeleTrader Professional User Guide.
F2	Shows the ID of a symbol in a price page. Lets you edit the editable columns of a price page (e.g. column **Text**).
F3	Shows / hides the ticker. See Ticker on page 63
F4	Shows / hides the Navigation pane.
F5	Reloads the data in the chart.
F6	Shows / hides the **Alerts** window. See Alerts (Notifications) on page 321
F7	Shows / hides the **Symbol Search** dialog. See Searching for Securities in the Symbol Search Dialog on page 34
F8	Shows the **Change Symbol** dialog. See Changing Symbols on page 73
F9	Opens a new quick quote document. See Quick Quote on page 63
F10	Closes the active document window.
F11	Shows / hides the Information pane. See Connection Log in the Information Pane on page 443
F12	Jumps to the next virtual page. See Switching Between Virtual Pages on page 155
ALT (while drawing a trend line)	Moves the line vertically without changing its direction. See Lines and Trend Channels on page 246
ALT + F1	Places a buy order for the selected symbol (when using the trading integration)

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ALT + F2	Places a sell order for the selected symbol (when using the trading integration)
ALT + F4	Closes TeleTrader Professional.
SHIFT (while starting Professional)	Forces the login dialog before starting TeleTrader Professional.
SHIFT (while double-clicking on a chart)	Opens the **Chart Properties** dialog.
SHIFT (while drawing a trend line)	Draws the line at fixed angles of 45°, 90°, 180° etc. See Lines and Trend Channels on page 246
SHIFT (while opening an options matrix)	Forces the **Choose Product** dialog (if applicable for this underlying). See Options Matrix on page 59
SHIFT + F4	Tiles document windows horizontally. See Arranging Document Windows on the Screen on page 162
SHIFT + F5	Cascades document windows. See Arranging Document Windows on the Screen on page 162
SHIFT + F12	Jumps to the previous virtual page. See Switching Between Virtual Pages on page 155
CTRL (while dragging a drawing object)	Copies a drawing object. See Moving and Copying Drawing Objects on page 273
CTRL (while dragging the Navigation pane)	Prevents docking of the Navigation pane. See Undocking, Moving and Hiding Panes on page 144
CTRL (while drawing with a drawing tool)	Activates the **Snap** tool temporarily. See Snapping to the Nearest Price with the Magnet on page 246
CTRL (while clicking on the time scale)	Activates the **Zoom Out** tool. See Zooming a Section of a Chart on page 204
CTRL (while opening several symbols at once)	Opens each symbol in a separate document (price page, watch list, market depth or time and sales) or overlays all symbols in one chart pane. See Opening Symbols from Existing Documents on page 66
CTRL + F6	Cycles through the document windows within a virtual page.
CTRL + F7	Inserts a symbol in a document. See Inserting Symbols on page 74
CTRL + F8	Overlays a symbol in a chart. See Inserting, Overlaying and Changing Symbols in a Chart on page 187
CTRL + F9	Exports a symbol from the chart to the local database. See Using Charts Offline on page 242
CTRL + F12	Jumps to the next empty virtual page. See Switching Between Virtual Pages on page 155
CTRL + A	Selects all content of a document (for example a price page). See Selecting Rows or Columns of a Price Page on page 89
CTRL + B	Opens the order book (when using a trading integration)

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CTRL + C	Copies the highlighted content.
CTRL + D	Detaches / reattaches a document window from the Professional main window. See Arranging Document Windows on the Screen on page 162
CTRL + E	Opens the properties dialog for a document. See Customizing Documents, Pop-up Windows and Panes on page 78
CTRL + F	Searches for a word in a news story or in news headlines. See Searching for Keywords in News on page 108
CTRL + G	Used from a chart document: Saves the current chart as picture file. See Saving Charts as Picture Files on page 241 Used from a price page document: Inserts the VWAP columns. See Adding, Removing and Customizing the VWAP Columns on page 98
CTRL + H	Opens the transaction history (when using a trading integration)
CTRL + K	Inserts a study alert. See Study Alerts on page 328
CTRL + L	Used from a chart document: Inserts an intersection alert. See Intersection Alerts on page 326 Used from a price page document: Inserts a price alert. See Price Alerts on page 321 Used from a news document: Inserts a news alert See News Alerts on page 325
CTRL + N	Creates a new empty document. See Opening Symbols in New Documents on page 64
CTRL + O	Opens a workspace. See Opening Saved Workspaces on page 152
CTRL + P	Prints the current document. See Printing Documents on page 163
CTRL + R	Inserts an empty row in a price page. See Rearranging and Resizing Rows and Columns on page 81
CTRL + S	Saves the current workspace. See Creating and Saving Workspaces on page 150
CTRL + T	Opens the **Insert Study** dialog. See Inserting Studies on page 300
CTRL + V	Pastes content from the clipboard.
CTRL + W	Shows / hides the document window captions. See Changing the Document Window Captions on page 162
CTRL + X	Cuts the highlighted content.
CTRL + Y	Saves all charts as picture files or chart documents. See Saving Settings on page 343
CTRL + [NUMBER]	Switches to the virtual page with the chosen number. See Switching Between Virtual Pages on page 155
CTRL +	Closes all document window on the current virtual page. See Closing Documents on page 164
CTRL + SHIFT (while opening several symbols in a chart)	Opens every symbol in a separate chart pane. See Opening Symbols from Existing Documents on page 66
CTRL + SHIFT + N	Opens the **New Document** list in the **Main** toolbar.

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	See Opening Symbols in New Documents on page 64
CTRL + SHIFT + S	Highlights the first symbol in the chart.
CTRL + SHIFT + F9	Exports a symbol from the chart to a text file. See Using Charts Offline on page 242
CTRL + ALT + B	Opens the **Format Objects** dialog. See Customizing Chart Objects on page 233
CTRL + ALT + C	Copies a document window. See Arranging Document Windows on the Screen on page 162
CTRL + ALT + F	Opens the Navigation pane properties dialog. See Customizing the Navigation Pane on page 140
CTRL + ALT + S	Opens the **Trading Settings** dialog. See Changing the Trading Settings on page 433
CTRL + ALT + W	Opens the **Windows** dialog with which you can activate or close document windows. See Arranging Document Windows on the Screen on page 162
CTRL + ALT + X	Cuts the data history of a chart. See Changing the Amount of Data Displayed in the Chart on page 217
CTRL + ALT + Z	Sets a starting point for charts with a percentage scale. See Changing the Type of the Price Scale on page 185
ALT + SHIFT + B	Moves a drawing object to the background. See Moving and Copying Drawing Objects on page 273
ALT + SHIFT + D	Deletes all drawing objects of a chart. See Deleting Drawing Objects on page 297
ALT + SHIFT + F	Moves a drawing object to the foreground. See Moving and Copying Drawing Objects on page 273
ALT + SHIFT + M	Opens the **Edit bookmark** dialog. See Setting, Moving and Editing Bookmarks on page 208
INS	Expands the time series (same as + PLUS key). See Scaling the Time Series to the Screen on page 206
DEL (when no chart object is selected)	Compresses the time series (same as – MINUS key). See Scaling the Time Series to the Screen on page 206
DEL (when a chart object or row is selected)	Deletes the selected row or the selected chart object.
ESC	Stops the download of data in the current chart.
HOME (in news documents)	Removes search term from keyword search, and resets the news document. See Quick Keyword Search in News on page 110
HOME (in charts)	Resets the chart to its default settings (for example zooming, scaling and margins) and jumps to the beginning (newest data) of the chart.
END (in charts)	Jumps to the end (oldest data) of a chart (without resetting the chart).
PAGE UP / DOWN	Browses page by page through long documents (price pages, news stories, charts etc.). In charts, the time series will be moved horizontally by default – to reverse this, deactivate the option **Use Page Up and Page Down keys for scrolling the chart horizontally** under **Tools > Options > Charts** (see Chart Settings on page 340).
CTRL + PAGE UP / DOWN	In charts, moves the time series vertically by default – to reverse this, deactivate the option **Use Page Up and Page Down keys for scrolling the chart horizontally** under **Tools > Options > Charts** (see Chart Settings on page 340).

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LEFT / RIGHT (arrow keys in charts)	*In normal chart mode:* Moves the time series in charts left and right bar by bar. *When the* **Crosshair** *or* **Vertical Line** *tools are active:* Moves the vertical line on the chart left and right. *When the option* **Use arrow keys (Left or Right) for activating the Vertical Line** *under* **Tools > Options > Chart** *is activated*: On first keystroke, activates the Vertical Line tool and positions the line at the left or right edge of the visible chart area. As soon as the Vertical Line tool is active, each keystroke moves the vertical line left and right.
UP / DOWN (arrow keys in charts)	*In normal charts (not linked to another document):* Changes the vertical scaling of the chart (compress and expand). *When the* **Crosshair** *tool is active:* Moves the horizontal line on the chart up and down. *In linked charts:* Navigates through the linked list of symbols. This behavior can be deactivated with the option **Use arrow keys (Up and Down) for navigating through linked charts** under **Tools > Options > Chart**. You can then use CTRL + UP / DOWN instead to navigate through linked symbols.
CTRL + UP / DOWN (in linked charts)	Changes the vertical scaling of the chart (compress and expand). This allows you to use this feature also in linked charts, where UP and DOWN keys are normally used for browsing the linked list of symbols (see above). If you deactivate the option **Use arrow keys (Up and Down) for navigating through linked charts** under **Tools > Options > Chart**, this shortcut will instead navigate through the linked list of symbols.
+ (PLUS)	Expands the time series (same as INS key). See Scaling the Time Series to the Screen on page 206
- (MINUS)	Compresses the time series (same as DEL key). See Scaling the Time Series to the Screen on page 206

Toolbars

TeleTrader Professional offers several toolbars for quicker access to important commands.

To hide or show a toolbar

- In the **View** menu, choose **Toolbars**.
- Select the name of the toolbar that you want to show or hide. Visible toolbars are shown with a check mark.

Note Alternatively, right-click on any toolbar and select all toolbars that should be visible.

Main toolbar

Icon	Name	Description
	New Document	Creates a new empty document. See Opening Symbols in New Documents on page 64
	Open	Opens a saved document. See Opening Saved Documents on page 159
	Save	Saves the current document. See Creating and Saving Documents on page 159
	Save as Template	Saves the current settings of a document in a template. See Saving your Preferences in Templates on page 145

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	Cut	Cuts the highlighted content.
	Copy	Copies the highlighted content.
	Paste	Pastes content from the clipboard.
	Print	Prints the current document. See Printing Documents on page 163
	Print Preview	Shows a preview of the current document before printing. See Printing Documents on page 163
	Properties	Opens the properties dialog for a document. See Customizing Documents, Pop-up Windows and Panes on page 78

News toolbar

Icon	Name	Description
	Last Story Received	Jumps to the latest news story. See Showing and Hiding News Headlines and Stories on page 106
	Previous Story	Jumps to the previous news story. See Showing and Hiding News Headlines and Stories on page 106
	Next Story	Jumps to the next news story. See Showing and Hiding News Headlines and Stories on page 106
	Find	Searches for a word in a news story or in news headlines. See Searching for Keywords in News on page 108
	Headlines Only	Shows only the news headlines. See Showing and Hiding News Headlines and Stories on page 106
	Headlines and Story	Shows both news headlines and stories. See Showing and Hiding News Headlines and Stories on page 106
	Story Only	Shows only the news story. See Showing and Hiding News Headlines and Stories on page 106
	Display Source	Shows / hides the **Services** column of a headline. See Changing Font, Colors and Headline Data of News on page 107
	Display Date	Shows / hides the **Date** column of a headline. See Changing Font, Colors and Headline Data of News on page 107
	Display Time	Shows / hides the **Time** column of a headline. See Changing Font, Colors and Headline Data of News on page 107
	Display Key	Shows / hides the **Story no.** column of a headline. See Changing Font, Colors and Headline Data of News on page 107
	Clear news search	Removes search term from keyword search, and resets the news document. See Quick Keyword Search in News on page 110

Chart toolbar

Icon	Name	Description
	Zoom In	Zooms into a section of a chart.

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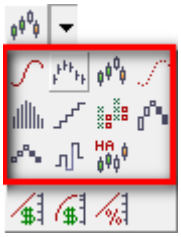
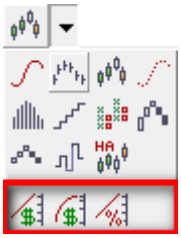
		See Zooming a Section of a Chart on page 204
	Zoom Out	Zooms out of a chart. See Zooming a Section of a Chart on page 204
	Compress	Compresses the time series. See Scaling the Time Series to the Screen on page 206
	Expand	Expands the time series. See Scaling the Time Series to the Screen on page 206
	Adjust Screen Mode	Scales the time series to the screen vertically. See Scaling the Time Series to the Screen on page 206
	Show All Data	Shows the entire data series on the screen. See Scaling the Time Series to the Screen on page 206
	Reload	Reloads the data in the chart.
	Tick by Tick	Changes to a tick by tick compression. See Changing the Data Compression on page 175
	TickBar	Changes to a TickBar compression. See Changing the Data Compression on page 175
	Intraday	Changes to an intraday compression. See Changing the Data Compression on page 175
	Daily	Changes to a daily compression. See Changing the Data Compression on page 175
	Weekly	Changes to a weekly compression. See Changing the Data Compression on page 175
	Monthly	Changes to a monthly compression. See Changing the Data Compression on page 175
	Time Region	Changes the time region of the chart. See Changing the Amount of Data Displayed in the Chart on page 217
	**Chart Types**	Changes the current chart type. See Changing the Chart Type on page 176
	**Chart Scales**	Changes the type of the vertical price scale. See Changing the Type of the Price Scale on page 185
	Chart Objects	Opens the **Format Objects** dialog. See Customizing Chart Objects on page 233
	Insert Study	Opens the **Insert Study** dialog. See Inserting Studies on page 300

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Drawing toolbar

Icon	Name	Description
	Select	Selects chart objects on click. Displays the Data Info box while clicking. See Reading Values from a Chart on page 212
	Crosshair	Keeps values visible in the Data Info box on click (shows crosshair on chart). See Reading Values from a Chart on page 212
	Vertical Line	Keeps values visible in the Data Info box on click (shows vertical line on chart). See Reading Values from a Chart on page 212
	Free Hand	Moves the time series on the screen (drag and drop). See Scaling the Time Series to the Screen on page 206 and Extending the Time Line to the Future on page 224
	Snap	Positions the reference point of a drawing tool at the nearest price (magnet). See Snapping to the Nearest Price with the Magnet on page 246
	Free Line	Draws a trend line or free line. See Lines and Trend Channels on page 246
	Trend Channel	Draws a trend channel. See Lines and Trend Channels on page 246
	Horizontal Line	Draws a horizontal line (support / resistance line). See Lines and Trend Channels on page 246
	Regression Line	Draws a regression line. See Regression Lines and Regression Channels on page 251
	Regression Channel	Draws a regression channel. See Regression Lines and Regression Channels on page 251
	Rectangle	Draws a rectangle. See Shapes on page 252
	Ellipse	Draws an ellipse. See Shapes on page 252
	Fibonacci Fan	Draws a Fibonacci Fan. See Fibonacci Fans on page 252
	Fibonacci Trend Line	Draws Fibonacci Trend Line. See Fibonacci Trend Line on page 253
	Fibonacci Retracements	Draws Fibonacci Retracements. See Fibonacci Retracements and Expansions on page 254
	Fibonacci Expansions	Draws Fibonacci Expansions. See Fibonacci Retracements and Expansions on page 254
	Fibonacci Arc	Draws Fibonacci Arcs. See Fibonacci Arcs on page 256
	Speed Resistance Line	Draws Speed Resistance Lines. See Speed Resistance Lines on page 257
	Gann Fan	Draws a Gann Fan. See Gann Fans on page 259
	Andrews Pitchfork	Draws an Andrews Pitchfork.

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		See Andrews Pitchfork on page 262
	Wave and Harmonics	Draws waves or Harmonic Patterns. See Wave and Harmonics on page 264.
	Pivot Points	Inserts Pivot Points. See Pivot Points on page 260
	Text	Adds text. See Text on page 267
	Vertical Lines	Draws vertical lines. See Vertical, Fibonacci and Cycle Lines on page 267
	Fibonacci Vertical Lines	Draws Fibonacci vertical lines. See Vertical, Fibonacci and Cycle Lines on page 267
	Cycle Lines	Draws cycle lines. See Vertical, Fibonacci and Cycle Lines on page 267
	Price Change	Draws a price change object. See Price Change on page 269
	Data Cut	Cuts the data history of a chart. See Changing the Amount of Data Displayed in the Chart on page 217
	Set vertical scale zero point	Sets a starting point for charts with a percentage scale. See Changing the Type of the Price Scale on page 185
	Arrow Up	Draws an upwards arrow. See Arrows on page 270
	Arrow Down	Draws a downwards arrow. See Arrows on page 270
	Next Line Style	Switches to the next line style for a chart object. See Changing the Title, Color and Line Style on page 272
	Color	Selects a new color for a chart object. See Changing the Title, Color and Line Style on page 272
	To Foreground	Moves a drawing object to the foreground. See Moving and Copying Drawing Objects on page 273
	To Background	Moves a drawing object to the background. See Moving and Copying Drawing Objects on page 273
	Delete All	Deletes all drawing objects of a chart. See Deleting Drawing Objects on page 297

Workspace toolbar

Icon	Name	Description
	Open Workspace	Opens a workspace. See Opening Saved Workspaces on page 152
	Save Workspace	Saves the current workspace. See Creating and Saving Workspaces on page 150
	Close Workspace	Closes the current workspace. See Closing Workspaces on page 152
	Virtual Page by Virtual Page	Switches to another virtual page. See Switching Between Virtual Pages on page 155

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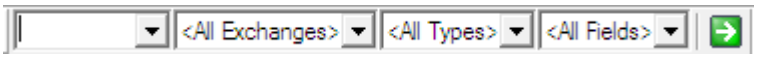
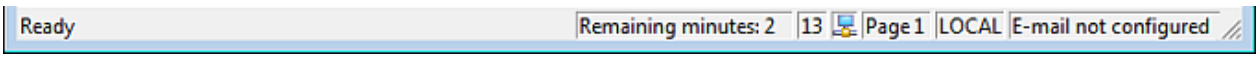
Symbol Search toolbar



See Searching for Securities from the Toolbar on page 33.

Status Bar

The status bar shows different information about the current state of TeleTrader Professional, for example its connection status, the current number of subscribed symbols, the name of the active virtual page etc.



To hide or show the status bar

- On the **View** menu, choose **Status Bar**.

Elements of the status bar

Toolbar Status	Enlarge chart with Zoom Tool	On the left side of the status bar, a short description of a toolbar command is shown when the mouse pointer is moved over the corresponding toolbar icon.
Remaining Data	Remaining ticks: 12	When the active document shows an intraday or tickbar chart, the number of minutes or ticks that remain until the current bar is completed is shown here. This information is also shown in the chart header of the respective chart.
Subscribed Symbols	13 250(85)	The number of symbols that you are subscribed to at the moment is shown here. Only subscribed symbols are automatically updated in your documents when new ticks arrive. The number will turn red when you have exceeded the maximum number of subscribed symbols. It then shows the maximum number allowed, and in brackets the number of additional symbols that were automatically unsubscribed. Double-click on the number to directly access the options sheet **Subscription**. There you can see which symbols you are subscribed to and unsubscribe symbols if necessary. See Subscription Settings on page 339.
Connection Status		The current connection status between TeleTrader Professional and the Market Data Server is shown here. Right-click the icon to disconnect, reconnect or change the settings for automatic reconnection. See Monitoring the Connection on the Status Bar on page 441.
Virtual Page	Page 1	The name of the active virtual page is shown here. Click here to switch to a different virtual page. See also Switching Between Virtual Pages on page 155.
Time Zone	LOCAL	The current time zone is shown here. The time zone is used for all time values that are displayed in charts, price pages, news documents etc. Click on the current time zone to change the time zone setting. See also Time Zone Settings on page 348.

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E-Mail Status	E-mail not configured. Mail pending: 0	The current status of the internal e-mail client is shown here. Click here to configure the e-mail settings or to view or clear the log files. See also E-Mail Settings on page 348 and Sending Workspaces, Virtual Pages or Documents via E-Mail on page 169.

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Importing and Exporting Security Data

You can display live, updating quote data or historical data from TeleTrader Professional in Excel or Open Office spreadsheets, using the DDE protocol (Dynamic Data Exchange) or RTD (Real-Time Data; only for Microsoft Excel). To do this, you can simply use a **Copy** command in TeleTrader Professional, or use a flexible syntax to request different data sets. DDE and RTD offer similar functionality: To help you decide which one to use, see below.

If you want to access data from other data feeds in TeleTrader Professional, you can use the **Security Data Wizard** to import external security data in Metastock or ASCII format to your local database, and use it in Professional charts.

If you have a list of ISINs or other symbol identifiers that you want to open as a price page in TeleTrader Professional, you have the possibility to import security lists from text files (must be used together with the RTD Lookup command to transform ISINs, WKNs, tickers or names to internal symbol IDs).

You can also copy the content of most documents as text and insert it into other programs.

DDE vs. RTD for Microsoft Excel

When displaying data in Microsoft Excel, you can choose between DDE (Dynamic Data Exchange) or RTD (Real-Time Data). Both offer similar functionalities. The main differences between TeleTrader Professional DDE and TeleTrader Professional RTD are:

- *Speed*: RTD is a newer technology than DDE and was specifically designed for live data scenarios. On the other hand, DDE can handle arrays of data, while RTD uses single connections for every cell. In most cases, RTD should perform better, but when using a lot of arrays, DDE might be the better choice.
- *Cell references*: RTD uses an Excel function syntax and can therefore also use cell references as part of the formula. This is not possible with DDE, as it uses a different function format than other standard Excel functions.
- *Functionality*: RTD offers more functionality than DDE, for example the possibility to search for symbols from within an Excel spreadsheet and to set a custom time zone.
- *Syntax hints*: When creating links manually, Professional RTD offers hints when minor syntax errors are detected (for example using the wrong date format).
- *Studies*: Copying Price Page studies into Microsoft Excel is only supported by Professional RTD.

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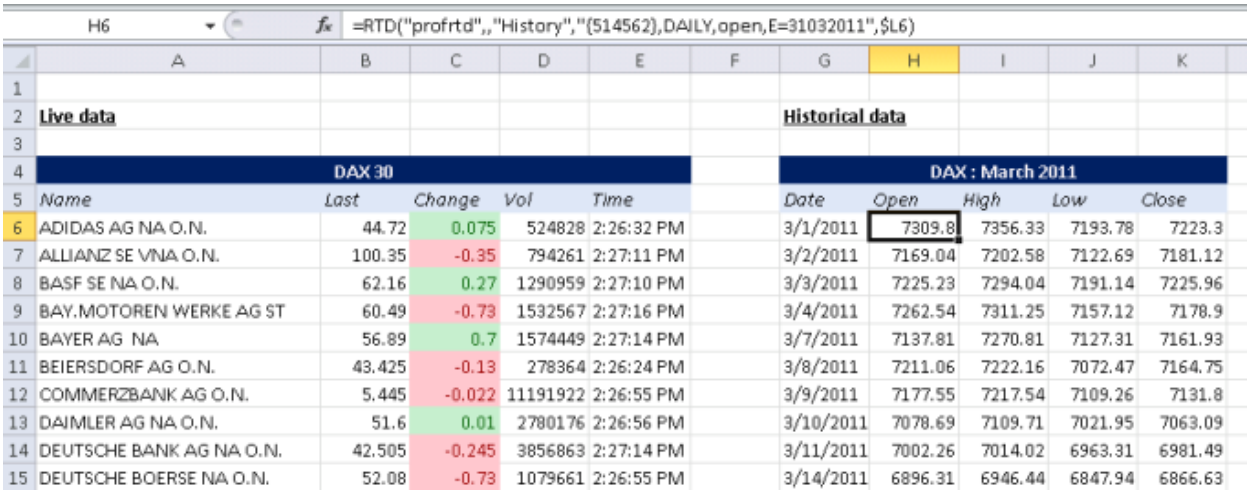
RTD – Retrieving Real-Time Data with Excel

You can display live, updating quote data or historical data in Microsoft Excel using the software TeleTrader Professional RTD. RTD (Real-Time Data) is a technology that was specifically designed for live data scenarios. It uses the built-in RTD formulas of Microsoft Excel, which means that you can use cell references etc. as placeholders in your spreadsheets like with any other Excel formula.



H6 =RTD("profrtd",,"History","{514562},DAILY,open,E=31032011",$L6)

	A	B	C	D	E	F	G	H	I	J	K
1											
2	**Live data**						**Historical data**				
3											
4	DAX 30						DAX : March 2011				
5	*Name*	*Last*	*Change*	*Vol*	*Time*		*Date*	*Open*	*High*	*Low*	*Close*
6	ADIDAS AG NA O.N.	44.72	0.075	524828	2:26:32 PM		3/1/2011	7309.8	7356.33	7193.78	7223.3
7	ALLIANZ SE VNA O.N.	100.35	-0.35	794261	2:27:11 PM		3/2/2011	7169.04	7202.58	7122.69	7181.12
8	BASF SE NA O.N.	62.16	0.27	1290959	2:27:10 PM		3/3/2011	7225.23	7294.04	7191.14	7225.96
9	BAY.MOTOREN WERKE AG ST	60.49	-0.73	1532567	2:27:16 PM		3/4/2011	7262.54	7311.25	7157.12	7178.9
10	BAYER AG NA	56.89	0.7	1574449	2:27:14 PM		3/7/2011	7137.81	7270.81	7127.31	7161.93
11	BEIERSDORF AG O.N.	43.425	-0.13	278364	2:26:24 PM		3/8/2011	7211.06	7222.16	7072.47	7164.75
12	COMMERZBANK AG O.N.	5.445	-0.022	11191922	2:26:55 PM		3/9/2011	7177.55	7217.54	7109.26	7131.8
13	DAIMLER AG NA O.N.	51.6	0.01	2780176	2:26:56 PM		3/10/2011	7078.69	7109.71	7021.95	7063.09
14	DEUTSCHE BANK AG NA O.N.	42.505	-0.245	3856863	2:27:14 PM		3/11/2011	7002.26	7014.02	6963.31	6981.49
15	DEUTSCHE BOERSE NA O.N.	52.08	-0.73	1079661	2:26:55 PM		3/14/2011	6896.31	6946.44	6847.94	6866.63

With TeleTrader Professional RTD, you can include the current quotes of several symbols in your spreadsheets, or retrieve historical data and display it in a table. The necessary RTD formulas can be created by copying live, updating quote data from TeleTrader Professional to Microsoft Excel. The syntax for RTD links gives you great flexibility in formulating your own requests.

Note For some examples of how to use TeleTrader Professional RTD, a sample Excel sheet is included in the installation: Right-click the RTD tray icon and choose **Help > Samples** to open it. See also Samples for the RTD Component on page 403.

Automatically started on opening your Excel spreadsheet

TeleTrader Professional RTD is started automatically in the background as needed. You can stop the connection manually when you don't need it anymore. If you have not installed TeleTrader Professional yet, you have to download and install it on your computer first.

Learn more:

- System Requirements for the RTD Component on page 382
- Downloading and Installing the RTD Component on page 383
- Starting and Stopping the RTD Connection on page 384
- Choosing the Time Zone for the RTD Component on page 388

Copy RTD links from

You can use the **Copy** command from a price page, watch list, market depth, options matrix, quick quote or time and sales document to copy live, updating quote data to Microsoft Excel. The RTD links can then be inserted into a Microsoft Excel Table with the function **Insert** or with the key combination CTRL + V.

In order to use RTD when copying data from TeleTrader Professional documents to your spreadsheet software, you have to set the DDE/RTD format under **Tools > Options > Price Page** to **Microsoft Office RTD** (see Price Page Settings on page 344).

Learn more:

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Setting up an RTD Link with Live Data on page 388

Retrieve live, updating quote data, market depth and fundamental data

With live RTD links, you can retrieve a wide variety of data fields for a security, ranging from live, updating quote data to live market depth data and fundamental data (including company information and balance sheet data).

```
=RTD("ProfRTD";;"Live";"{949843},Last")
```

Learn more:

Setting up an RTD Link with Live Data on page 388

Tips and Examples for Retrieving Live Data on page 392

Retrieve historical data, intraday and tick data

You can also display historical data for a security. Choose the time region that should be covered and the data compression / period, which can range from raw / tick-by-tick data over intraday bars to daily, weekly and monthly data.

```
=RTD("ProfRTD";;"History";"{829802},Daily, PCLOSE, E=23092008";1)
```

Learn more:

Setting up an RTD Link with Historical Data on page 393

Tips and Examples for Retrieving Historical Data on page 396

Search for symbol IDs using ISIN, WKN, ticker or name of the symbol

You can search for symbol IDs that are needed in other RTD formulas by using the symbol's ISIN, WKN, ticker or name. Additional search options like exchange name, currency, strike price and expiration date are also available. The search result will be shown with its symbol ID, allowing the user to reference the ID in other RTD requests (cell references).

```
=RTD("ProfRTD";;"Lookup";"074305, Vienna")
```

Learn more:

Searching for Symbols with RTD on page 397

Tips and Examples for Looking Up Symbols on page 398

Alternative to using TeleTrader Professional RTD

The alternative to using RTD is the older DDE protocol (Dynamic Data Exchange). As RTD is a newer technology than DDE, RTD performs better in most cases. RTD also uses standard Excel syntax, which means that you can use cell references in RTD formulas to make them re-usable across your spreadsheet.

For information about using **Microsoft Office DDE**, see DDE – Dynamic Data Exchange with Excel / Open Office on page 366.

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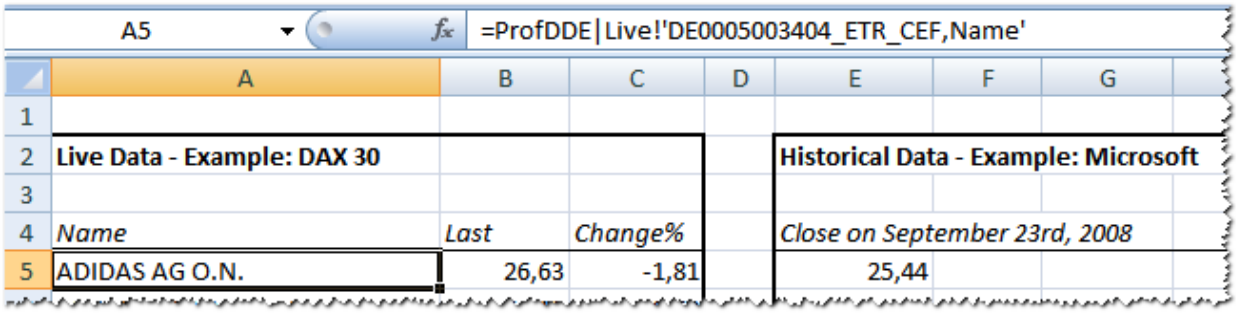
DDE – Dynamic Data Exchange with Excel / Open Office

Dynamic Data Exchange (DDE) is a protocol that allows different programs to exchange data. With TeleTrader Professional, you can use it to display live, updating quote date or historical quotes in your spreadsheet software, for example in Microsoft Excel. Open Office is also supported.

You can include the current quotes of several symbols in your spreadsheets, much like in a price page. Additionally, you can also retrieve historical data and display it in a table. The syntax of the DDE links gives you great flexibility in formulating your own requests.



To retrieve and update the quote data in your spreadsheets, a separate program, TeleTrader Professional DDE, is used to communicate with the TeleTrader Market Data Server. This program is included with TeleTrader Professional, and started automatically in the background as needed.

In order to use DDE when copying data from TeleTrader Professional documents to your spreadsheet software, you have to set the DDE/RTD format under **Tools > Options > Price Page** to **Microsoft Office DDE** or **OpenOffice.org DDE** (see Price Page Settings on page 344).

For information about using **Microsoft Office RTD**, see RTD – Retrieving Real-Time Data with Excel on page 364.

Starting and Stopping the DDE Connection

To retrieve and update the quote data that you include in your spreadsheets, a separate program is needed that communicates between the TeleTrader Market Data Server and your spreadsheet application. This program is called TeleTrader Professional DDE. It is automatically included with TeleTrader Professional.

You can see if the DDE connection is active in your Windows system tray:

When you set up a DDE link in your spreadsheet software (like described in the sections Setting up a DDE Link with Live Data on page 368 and Setting up a DDE Link with Historical Data on page 370), or open a spreadsheet that contains DDE links, TeleTrader Professional DDE is started automatically. However, you can also manually start the DDE connection.

The DDE connection stays active even if you close TeleTrader Professional or the spreadsheet that contains the DDE links. You can stop the connection manually if you don't need it anymore.

> **Note** **TeleTrader Professional** DDE creates a separate connection to the TeleTrader Market Data Server. Therefore, firewalls have to be set up to allow traffic for TeleTrader Professional DDE (*ProfDDE.exe*) on either port 80 or 2088 (TCP).

To start the DDE connection manually

- Click on the **Windows Start** button, and then select **All Programs > TeleTrader Professional > TeleTrader Professional DDE Server**.

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To stop the DDE connection manually

- In the Windows system tray, right-click the Professional DDE icon:

- Select **Exit**.

Possible issues in Microsoft Excel

TeleTrader Professional DDE always delivers all ticks to Microsoft Excel. However, in some cases, Excel will not supply all ticks via the DDE link.

If you want to copy the content of calculated watch list columns like **Total P/L** or **P/L Perc** to Excel, you have to change the formula options in the **Excel Options** dialog to use a different reference style. Click **Formulas**, and under **Working with formulas** select the option **R1C1 reference style**.

In some cases, the calculated values of watch lists are not rounded correctly, resulting in displayed numbers like for example *1.78E-15*. In this case, you have to highlight the affected cells in Excel. Then, right-click on the selection and click **Format Cells**. Choose **Number** and the amount of decimal places that you want to show. The calculated values should then be rounded according to your settings.

Microsoft Excel 2007 security settings

Microsoft Excel 2007 has very tight security settings. Sometimes, when you open a saved spreadsheet with DDE links, the data is not being updated even though TeleTrader Professional DDE is running and visible in the system tray.

If this is the case, you can try to change the security settings in the **Excel Options** dialog. Click **Trust Center**, and then click the button **Trust Center Settings**. Change the settings under **External Content** to your needs.

Copying Live Quote Data to Microsoft Excel with DDE

You can copy live, updating quote data from a price page, watch list, market depth, options matrix, quick quote or time and sales document to Microsoft Excel. The easiest and most comfortable way to do this is to use the **Copy** command in TeleTrader Professional. In addition, you can also set up a DDE link with live data manually (see Setting up a DDE Link with Live Data on page 368).

> **Note** The following steps describe how to set up a DDE connection in Microsoft Excel. You can also use Open Office instead: To do so, you have to adapt the DDE/RTD format in the program options (see Price Page Settings on page 344).

To copy live, updating quote data to Microsoft Excel

- Open a price page, watch list, market depth, options matrix, quick quote or time and sales document in TeleTrader Professional that shows the data that you want to copy. See also Opening Symbols on page 63 and Adding and Removing Columns on page 80.
- Select all cells that you want to copy to Microsoft Excel. You can highlight them with the mouse, or select complete rows or columns (see also Selecting Rows or Columns of a Price Page on page 89).
- Right-click on the selected cells and choose **Copy**.

> **Note** When you want to copy data from a market depth document, right-click in the summary view of the market depth document and choose **Copy** to copy all data.

- Open a Microsoft Excel spreadsheet.
- Paste the data that you have copied into Excel. For example, you can use the shortcut CTRL + V.

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- Microsoft Excel will now probably display a message to inform you that to display the data, an external program called *ProfDDE.exe* needs to be started. Confirm this message by clicking **Yes**.
- The data that you have copied will now be displayed in the Excel spreadsheet. It will be updated whenever new ticks arrive.

> **Note** By default, the column headings of the price page are copied along as well. You can disable this setting under **Tools > Options > Price Page** (see Price Page Settings on page 344).

Setting up a DDE Link with Live Data

The following examples show you how to set up DDE links with live data in Microsoft Excel or Open Office. However, in most cases it is easier to simply use the **Copy** command from your Professional document to create a live DDE link (see Copying Live Quote Data to Microsoft Excel on page 367). We recommend to use the **Copy** command for live quote data – this will create a separate DDE connection for every cell, which means that you can copy and paste the content more easily inside your spreadsheet.

If you want to use historical data in your spreadsheet, or a combination of historical and current data (for example, the last 10 ticks of a symbol), you have to use another type of DDE link: See Setting up a DDE Link with Historical Data on page 370.

To request live quote data manually in Microsoft Excel (single data field)

- Open a Microsoft Excel spreadsheet.
- In the cell where you want the data field to appear, type (or copy) the following formula:

```
=ProfDDE|Live!'AAPL_0FSPC,Last'
```

- The requested data will appear in the Microsoft Excel cell. The request above will for example fetch the *Last* price of the Apple stock.

To request live quote data manually in Microsoft Excel (multiple data fields)

- Open a Microsoft Excel spreadsheet.
- Highlight an area in the Excel spreadsheet that is big enough to hold the data fields that you want to request. For the following example, highlight an area that is eight columns wide and one row high.
- Click into the formula bar in Microsoft Excel and type (or copy) the following formula:

```
=ProfDDE|Live!'{458917},Name,Last,PercChg,Change,VolLast,Volume,D
ate,Time'
```

- Press the keys CTRL + SHIFT + ENTER to insert the quote data as an array into the selected area.

> **Note** The formula should now be surrounded with braces { } in the Excel formula bar to show that it has been inserted as an array formula. You can only edit the array in whole, not single cells that are part of it. To find more information about Excel arrays, please consult the documentation for Microsoft Excel.

- The requested data will appear in the highlighted area in Microsoft Excel. The request above will for example fetch live data for multiple fields of the Deutsche Post stock.

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Syntax for DDE links to live quote data

In your spreadsheet software, certain formulas are used to create the DDE links. If you use the **Copy** command, all DDE links are created automatically for you. If you set up the links manually, you have to use the following syntax to request live quote data:

```
=ProfDDE|Live!'<Symbol>,<Field1>[,<Field2>,...]'
```

Note In this user guide, the syntax for Microsoft Excel is used for all examples. In Open Office, the syntax needs to be changed as follows:

```
=DDE("PROFDDE";"Live";"<Symbol>,<Field1>[,<Field2>,...]")
```

Symbol	Internal identification of the symbol. You can either use the symbol identification number (for example `{829802}`) or its unique name (for example `MSFT_0FSPC`). To find out the identification of a symbol, click in the row of the symbol in a price page and press F2. Identification number and unique name can also be displayed in the price page columns **TID** and **TUN** or in the **Chart Properties** dialog for a symbol.
Field(s)	Name of the data field(s) that should be retrieved. The name is equal to the heading of the corresponding column in the Professional price page. If you want to retrieve more than one data field, separate the field names with a comma. You have to use the array command (CTRL + SHIFT + ENTER) after typing the formula in your spreadsheet to retrieve multiple data fields at once. See Available Field Names on page 405.

Market Depth Fields	For market depth data, the following fields can be used – the number in square brackets signifies the depth level, starting with 0:
	`MDBidSize[depth_level]` For example, `MDBidSize[2]` for the third depth level
	`MDBidCount[depth_level]`
	`MDBid[depth_level]`
	`MDAsk[depth_level]`
	`MDAskCount[depth_level]`
	`MDAskSize[depth_level]`
	Note It is not possible to display market depth data from NASDAQ via DDE.

VWAP Fields	When retrieving data from a calculated VWAP column (see Adding, Removing and Customizing the VWAP Columns on page 98 for details), the following data field syntax is used:
	`VWAP(Type,DateTimeF,DateTimeT,VolF,VolT,PriceF,PriceT)[OutputName]`
	`Type` Time period used for VWAP calculations: This can be `D` (Daily), `LH` (Last Hour), `C` (Custom), `N` (None) or `F` (Freeze).
	`DateTimeF/T` Begin and end date and time of a custom time period (`C`) in ISO format `YYYY-MM-DDThh:mm:ss`
	`VolF/T` Lower and upper boundaries for the volume range (optional)
	`PriceF/T` Lower and upper boundaries for the price range (optional)
	`OutputName` Defines the VWAP value that should be returned: `Price`, `StdDev`, `TotalVol`, `AvgVol`, `NumTicks`, `DateF`, `DateT`, `TimeF`, `TimeT`, `VolF`, `VolT`, `PriceF`, `PriceT`
	Examples for retrieving VWAP data:
	`=ProfDDE|Live!'{459237},VWAP(LH)[StdDev]'`
	`=ProfDDE|Live!'{458757},VWAP(C,2010-04-08T22:00:00,2010-04-`

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```
09T10:00:00,0,100000,40.00,45.00)[Price]'
```

Setting up a DDE Link with Historical Data

You can request historical quote data in your spreadsheet software from the TeleTrader Market Data Server. To do so, you must use a special formula syntax to tell TeleTrader Professional DDE what data you want to fetch.

To request only a single data field (for example, the *Close* price at a specific date), you can use the normal *formula functions* of your spreadsheet software. To request multiple data fields or records (for example, the dates and *Close* prices for a certain period of time), you have to use an *array formula*. With array formulas you can populate many data fields with one single command. Probably you will use array formulas most of the time.

Note The following examples describe how to set up a DDE connection in Microsoft Excel. You can also use Open Office instead. Syntax differences are explained below.

To request historical quote data in Microsoft Excel (single data field)

- Open a Microsoft Excel spreadsheet.
- In the cell where you want the data field to appear, type (or copy) the following formula:

```
=ProfDDE|History!'{829802} ,DAILY,PCLOSE,S=23092008,E=23092008'
```

- The requested data will appear in the Microsoft Excel cell. The request above will for example fetch the *Close* price of the Microsoft stock on September 23rd, 2008.

To request historical quote data in Microsoft Excel (multiple data fields)

- Open a Microsoft Excel spreadsheet.
- Highlight an area in the Excel spreadsheet that is big enough to hold the data fields that you want to request. For the following example, highlight an area that is six columns wide and eight rows high.
- Click into the formula bar in Microsoft Excel and type (or copy) the following formula:

```
=ProfDDE|History!'{829802}
,MIN3,DATE,TIME,OPEN,HIGH,LOW,PCLOSE,N=8,R'
```

- Press the keys CTRL + SHIFT + ENTER to insert the quote data as an array into the selected area.

Note The formula should now be surrounded with braces { } in the Excel formula bar to show that it has been inserted as an array formula. You can only edit the array in whole, not single cells that are part of it. To find more information about Excel arrays, please consult the documentation for Microsoft Excel.

- The requested data will appear in the highlighted area in Microsoft Excel. The request above will for example fetch the fields *Date*, *Time*, *Open*, *High*, *Low* and *Close* of the Microsoft stock for the last eight ticks in a 3-minute compression.

To request historical quote data in Microsoft Excel (multiple data fields) using Excel Add-in

Besides manually generating DDE links, you can also generate DDE links for retrieving the historical data using TeleTrader Professional Add-in for Excel.

- Open a Microsoft Excel spreadsheet.

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- Click the TeleTrader Professional ribbon in the Excel toolbar.
- Click the **DDE Server** toolbar button and then the **Show** button.
- In the **Formula Generator** pane define: **Symbol** name, **Interval**, **Time Series** and **Quote Elements**.
- Select one cell in the Excel spreadsheet and click the **Insert** button.
- Data will be displayed as an array to the right and down starting from the selected cell in the Excel spreadsheet.

Symbol	Defines the symbol identification number (for example `{829802}`) or unique name (for example `MSFT_0FSPC`) of the symbol for which you want to retrieve historical data. If you don't know the symbol's identification number, enter the symbol name, ISIN or WKN in the field and click the **Search** button. In the **Symbol Search Results** dialog, double-click the symbol that you want to use.
Interval	Choose the desired time compression for the historical data series.
Start Date	Choose the first date for the historical data series.
End Date	Choose the last date for the historical data series.
Records	Enter the number of retrieved historical data records – this setting defines the number of rows that will be added in the spreadsheet.
Display Time	Select this option to show time stamps in the **Start Date** and **End Date** date pickers (relevant when using Intraday data).
Sort Descending	Check to sort the historical data in descending order (newest data on top). Clear to sort the historical data in ascending order (oldest data on top).
Quote Elements	Select all quote elements that you want to show for the historical data series - this setting defines the number of columns that will be added in the spreadsheet.
Select All	Selects all quote element items.
Insert	Copies the DDE formula into the Excel spreadsheet, based on the selections above.

Note

This interface can be used with Excel 2007 (or higher). During installation of the latest version of TeleTrader Professional, you might be required to download and install *Microsoft VSTO 2010 Runtime*, which is a prerequisite for running the TeleTrader Professional Add-in for Excel. If you don't install Microsoft VSTO 2010 Runtime, you will still be able to use RTD and DDE links, but you will not be able to use the graphical user interface of the Add-in.

Syntax for DDE links to historical quote data

In your spreadsheet software, certain formulas are used to create the DDE links. To request historical data, you have to manually set up the links using the following syntax:

```
=ProfDDE|History!'<Symbol>,<Period>,<Field1>[,<Field2>,...],<Retr
ieved Data>[,<Order>]'
```

Note

In this user guide, the syntax for Microsoft Excel is used for all examples. In Open Office, the syntax needs to be changed as follows:

```
=DDE("PROFDDE";"History";"<Symbol>,<Period>,<Field1>[,<Field2>,...],<Ret
rieved Data>[,<Order>]")
```

Symbol	Internal identification of the symbol. You can either use the symbol identification number (for example `{829802}`) or its unique name (for example `MSFT_0FSPC`). To find out the identification of a symbol, click in the row of the symbol in a price page and press F2.

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	Identification number and unique name can also be displayed in the price page columns **TID** and **TUN** or in the **Chart Properties** dialog for a symbol.
Period	Data compression that you want to use. `MONTHLY` Use a monthly compression `WEEKLY` Use a weekly compression `DAILY` Use a daily compression `MINx` Use an intraday compression and specify the number of minutes (1-60) For example: `MIN5` – 5-minute compression `TICK` Use uncompressed data (tick by tick)
Field(s)	Name of the data field(s) that should be retrieved. The following fields are available: `DATE` Date for the retrieved record / data point `TIME` Time for the retrieved record / data point `LAST` Last price for the retrieved record / data point (for tick data only) `OPEN` Open price for the retrieved record / data point `HIGH` High price for the retrieved record / data point `LOW` Low price for the retrieved record / data point `PCLOSE` Last price for the retrieved record / data point `VOLLAST` Volume for the retrieved record / data point `OI` Open interest for the retrieved record / data point (for daily, weekly and monthly data only) If you want to retrieve more than one data field, separate the field names with a comma.
Retrieved Data	You can either specify how many records (data points) should be retrieved, or define a time region using a start date and end date. You cannot use both number of records and start / end date at the same time. *Number of records:* The last x records / data points of the symbol will be retrieved. The data is updated dynamically whenever new data comes in, so that always the most current data is shown. `N=x` Specify the number of records / data points that should be retrieved For example: `N=10` *Time region with start / end date:* The records / data points between the start date and the end date are retrieved. You have to always specify both dates, separated with a comma, in the format `DDMMYYYY`. `S=<Date>` Specify the start date for the time region that should be retrieved `E=<Date>` Specify the end date for the time region that should be retrieved For example: `S=01032005,E=31032005` If you want to set a time interval in addition to the date interval, you have to use the ISO date/time format `YYYY-MM-DDThh:mm:ss` with the parameters `Sdt` and `Edt`: `Sdt=<ISO>` Specify the start date and time for the time region that should be retrieved `Edt=<ISO>` Specify the end date and time for the time region that should be retrieved For example: `Sdt=2009-02-02T19:00:00,Edt=2009-02-02T20:00:00`
Order	Order of the retrieved records / data point. Skip to show the data in chronological order: Oldest data is displayed first. R Reverse chronological order: Newest data is displayed first

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Note If the result of your formula is an array, that means if you request several data fields or records at once, you have to use the array command (CTRL + SHIFT + ENTER) after typing the formula in your spreadsheet.

Historical data: More examples

Retrieve the last two dates, times and closes for the EURUSD currency pair (using its identification number) in a 5-minute compression (3 columns x 2 rows):

```
=ProfDDE|History!'{949843},MIN5,DATE,TIME,PCLOSE,N=2,R'
```

Retrieve the dates and closes for the Dow Jones Industrial Average (using its unique name) between April 3rd, 2006 and April 24th, 2006 in a daily compression (2 columns x 15 rows):

```
=ProfDDE|History!'DJI_0AWSPC,DAILY,DATE,PCLOSE,S=03042006,E=24042
006'
```

Security Data Wizard

The **Security Data Wizard** helps you to import external security data in Metastock or ASCII format to your local database, and use it in Professional charts. The Professional local database holds only symbols that you have manually added to it – either by exporting a time series from a chart to the local database (see Using Charts Offline on page 242) or by importing external data with the **Security Data Wizard**. You can also use the wizard to remove symbols from the local database, or rename them.

To open the wizard, choose **Security Data Wizard** from the **File** menu. With the **Next** button, you can jump to the next step of the wizard; with the **Back** button, you can review your settings and change them if necessary. The **Cancel** button will close the wizard without doing any changes to the local database.

Importing External Data to the Local Database

You can import external data to the Professional local database. The data can be in Metastock or ASCII format (text file, or comma separated values file).

The symbols in the local database can be found with Symbol Search and used in charts. You can work with all symbols that are available in your local database even if you do not have a live connection to the Internet. To do this, you have to switch to offline mode before disconnecting from the Internet: See Using Charts Offline on page 242.

Note The data in the import file must be ordered chronologically, with the oldest data first.

To import external data to the local database

- On the **File** menu, click **Security Data Wizard**.
- On the first page of the **Security Data Wizard**, click **Next**.
- On the **Action Selection** page, select **Data import** from the list and click **Next**.
- On the **Import Data Source** page, select the data format that you want to import: **Metastock format** will search for files in the Metastock data format, **ASCII format** will search for files in a text format (also comma separated values files).
- In the **Select data folder** list, choose the location of your import file, click on the file that you want to import and click **Next**.

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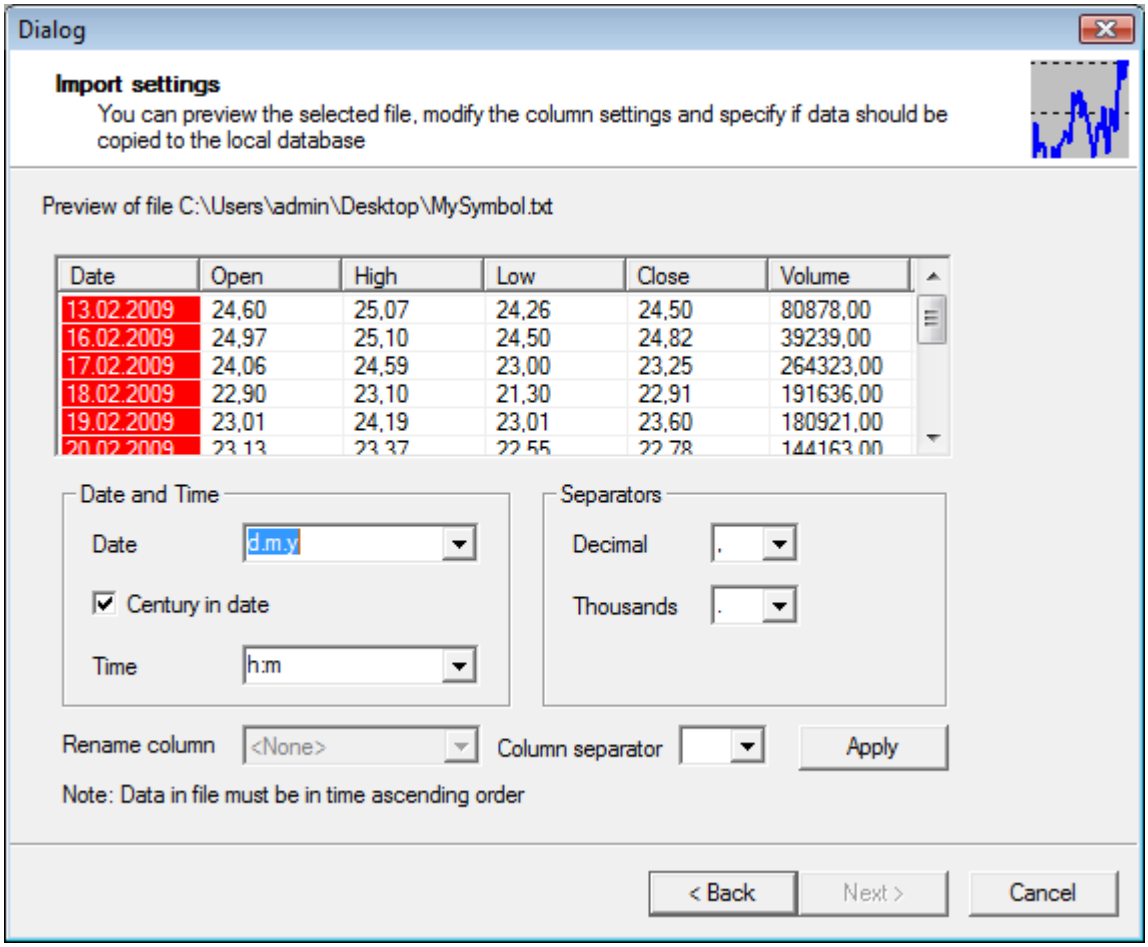
- On the **Import settings** page, you see a preview of the data that will be imported. The import settings on this page will help Professional correctly identify the data format used in your import file. Data columns that could not be correctly identified by Professional are marked in red. Adapt the settings to your needs, and click **Apply** every time you change something:



Control	Description
Date	Choose the date format used in the import data file
Century in date	Check if the import data file uses a date format with the century in the date (for example *2009-01-01*) Clear if the import data file uses a date format without the century (for example *09-01-01*)
Time	Choose the time format used in the import data file
Decimal	Choose the decimal separator used in the import data file
Thousands	Choose the thousands separator used in the import data file
Rename column	Click on a column header in the preview and choose a new name here to rename a column
Column separator	Choose the column separator (for comma separated values files)

- Click **Next** when you are finished.

Note The **Next** button will be disabled as long as Professional cannot correctly identify all data columns. These columns are highlighted in red. Adapt the settings until all columns are shown with a white background to proceed.

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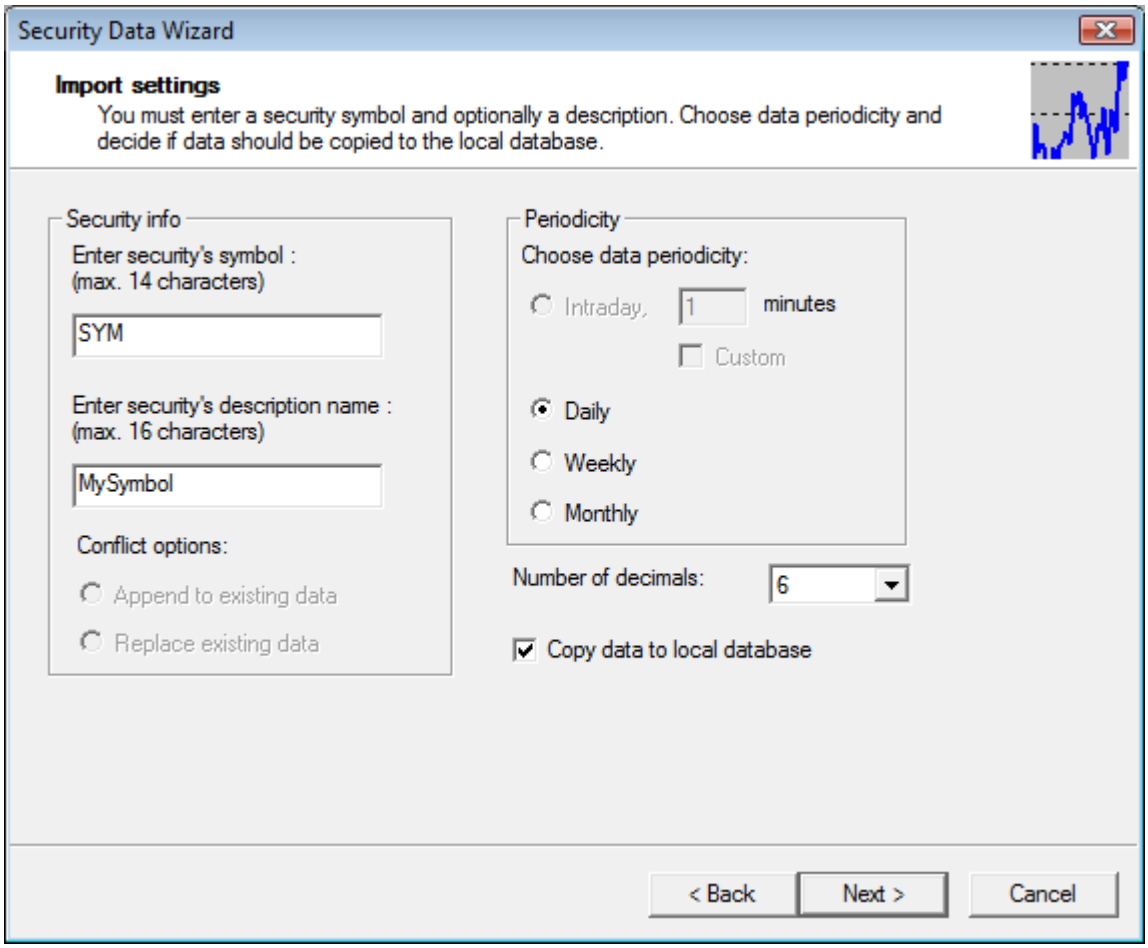
- On the next page, enter the security information that will be used to identify the new symbol in the local database and click **Next**:



Control	Description
Enter security's symbol	Enter a local symbol ID with at most 14 characters
Enter security's description name	Enter a symbol description (name) with at most 16 characters
Conflict options	This setting is used when you choose a symbol ID that already exists in the local database. Select an option when you are asked to do so: **Append to existing data** Add imported data to the existing symbol **Replace existing data** Replace the existing symbol
Choose data periodicity	Select the data compression for the imported data
Number of decimals	Choose how many decimals you want to import
Copy data to local database	Check to insert the imported data to the local database Clear to make the data available only temporarily (it will be deleted as soon as Professional is closed)

- On the **Completing Security Data Wizard** page, a summary of the import options is displayed. Review this summary – if you want to make changes to the import settings, click **Back**.
- When you are satisfied with the settings, click **Finish**.
- The wizard will close automatically when all data is imported. You can now find the imported symbol with Symbol Search under the ID and name that you have chosen for it. The symbol is automatically added to the exchange **<Local>**.

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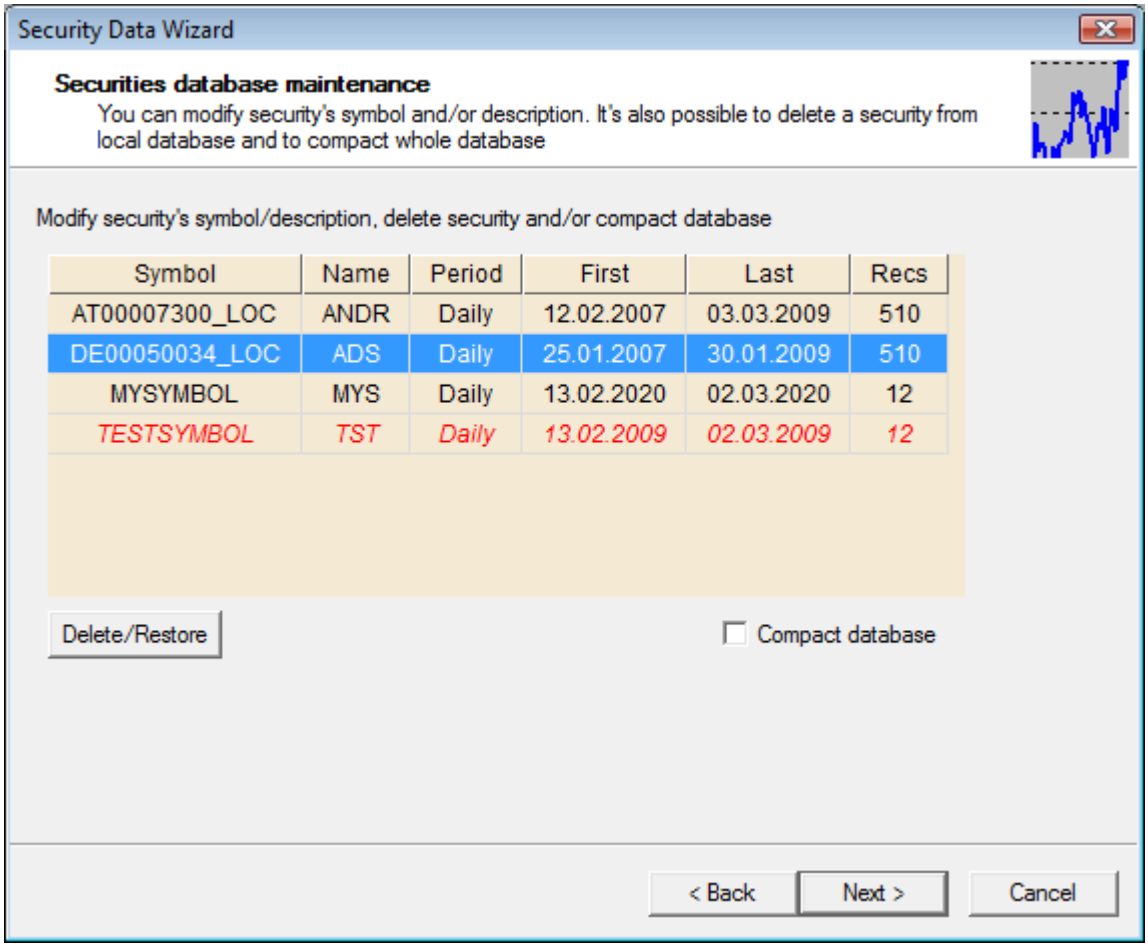
Maintenance of the Local Database

The local database of TeleTrader Professional holds only symbols that you have manually added to it – either by exporting a time series from a chart to the local database (see Using Charts Offline on page 242) or by importing external data with the Security Data Wizard (see Importing External Data to the Local Database on page 373). You can search for symbols in the local database with the normal Symbol Search functions.

If you want to remove some symbols from the local database, you can do so with the **Security Data Wizard**, no matter if they have been imported from external data or exported from a Professional chart. You can also compact the database to reduce the space that it needs on your hard disk in the same step.

To delete local data from the database and compact the database

- On the **File** menu, click **Security Data Wizard**.
- On the first page of the **Security Data Wizard**, click **Next**.
- On the **Action Selection** page, select **Database maintenance** from the list and click **Next**.
- On the **Securities database maintenance** page, select the symbol(s) that you want to delete from the local database. To select several symbols at once, hold the CTRL key while clicking on the symbols.
- Click **Delete/Restore**. The symbols that will be deleted are shown with a red, italic font.



Note If you have chosen symbols that already where marked for deletion, a click on **Delete/Restore** will remove them from the list of symbols that should be deleted.

- If you want to change the name or ID of a local symbol, double-click on the name, type a new name and press ENTER.

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- If you want to compact the database, select **Compact database**.
- Click **Next** when you are finished.
- On the **Completing Security Data Wizard** page, a list of actions is displayed that will be carried out as soon as you complete the wizard. Review this list – if you want to make changes to the actions, click **Back**.
- When you are satisfied with the list of actions, click **Finish**.
- The wizard will close automatically when all actions are completed.

Importing Security Lists

TeleTrader Professional offers the possibility to import a list of symbols from a text file to a price page. The symbols must be listed with their symbol identification number or unique name. Since you typically don't know the appropriate symbol ID or unique name unless you have already inserted the symbol in a document in TeleTrader Professional, the following procedure will show you a workaround using the RTD component (see RTD – Retrieving Real-Time Data with Excel on page 364).

The following example is assuming that you have a list of ISINs that you want to show in a price page. The procedure works in a similar way also for WKNs, tickers and names.

To open a security list as a price page (using RTD)

- In an Excel document, enter the list of ISINs in column A.
- In column B, enter an RTD formula that uses cell references to look up the ISINs from column A on a certain exchange (you can also add other restrictions, see Searching for Symbols with RTD on page 397). For example, if you want to get the Xetra stock with this ISIN, use the following formula:

```
=RTD("profrtd";;"Lookup";A2&",Xetra")
```

- The column B should now show a list of symbol IDs, like shown here:

	A	B
1	DE000A1EWWW0	{458757}
2	DE0008404005	{459237}
3	DE000BASF111	{458812}
4	DE0005190003	{458822}

- Copy the values from column B to a new text document and save the document as a **.txt* or **.csv* file.
- On the **File** menu in TeleTrader Professional, click **Document > Open**.
- In the **Open** dialog, select the saved text document.
- Click **Open**. The list of symbol IDs will now open as a price page.

To open a security list as a price page with ISIN

- In an Excel document, enter the list of ISINs in column A and the respective exchange in column B:

	A	B
1	DE0008469008	Indices Xetra
2	AT0000999982	Indices Vienna
3	AT0000641352	Vienna
4	DE000BASF111	Xetra
5	DE000BASF111	Duesseldorf

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- Save the document as a **.csv* file
- You can also enter the list of the ISINs into a *.txt file, the separator between the ISIN and the exchange can be "," " ;" or "|":

```
DE0008469008,Indices Xetra
AT0000999982;Indices Vienna
AT0000641352|Vienna
```

- On the **File** menu in TeleTrader Professional, click **Document > Open**.
- In the **Open** dialog, select the saved file.
- Click **Open**. The list of ISINs will now open as a price page.

More information on importing security lists

Text files with security lists that should be imported to a price page must fulfill the following requirements:

- File format: **.txt* or **.csv*
- Instead of Symbol IDs, symbol unique names can also be used.
- Symbols can be separated by paragraph mark (windows-style end line separator) only.
- Only 100.000 symbols (chains) can be openend at once.
- If chain symbols are included in the symbol list, each chain will be opened in a separate price page

Copy Data to the Clipboard as Text

You can copy the content of a price page, watch list, chart, time and sales, options matrix, market depth or quick quote document and insert it as normal text into other programs. If you copy one cell in tabular documents, only the text is copied. If you copy more than one cell, the appropriate column headers are copied as well (this can be switched off by using the option **Copy header automatically** under **Tools > Options > Price Page** – see Price Page Settings on page 344).

To copy content from a price page or watch list

- Highlight the content that you want to copy in the price page or watch list (see also Selecting Rows or Columns of a Price Page on page 89).
- On the **Edit** menu, choose **Copy as text**.
- Insert the copied data into another program or text editor.

To copy the time series of a chart

- Right-click on the symbol or study that you want to copy (or on the chart background to copy all symbols and studies) and choose **Copy Time-Series**.
- Insert the copied data into another program or text editor.

> **Note** For copying the time series as text to the clipboard, the same export limitations for tick and intraday data apply as for copying the time series directly to a text file. See Using Charts Offline on page 242.

To copy a row from a time and sales document

- In the time and sales document, right-click the row that you want to copy and choose **Copy as text**.

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- Insert the copied data into another program or text editor.

To copy all content of a time and sales document

- Right-click anywhere in the time and sales document and choose **Copy All**.
- Insert the copied data into another program or text editor.

To copy the content of a market depth document

- Right-click on the part of the market depth document (summary or depth view) that you want to copy and choose **Copy as text**.
- Insert the copied data into another program or text editor.

To copy the content of a quick quote document

- Right-click in the quick quote document and select **Copy as text**.
- Insert the copied data into another program or text editor.

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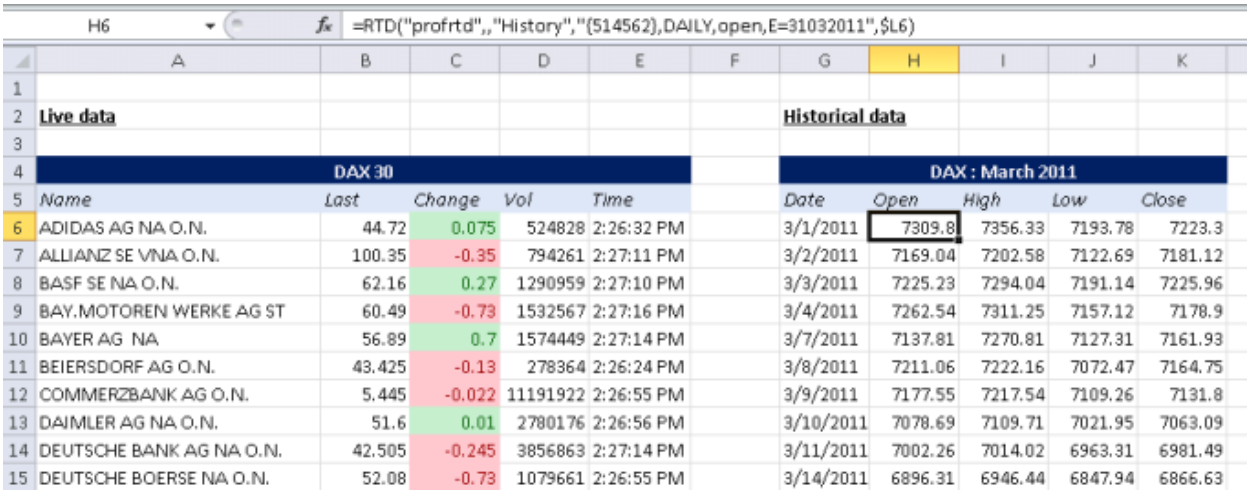
RTD – Real-Time Data in Excel

You can display live, updating quote data or historical data in Microsoft Excel using the software TeleTrader Professional RTD. RTD (Real-Time Data) is a technology that was specifically designed for live data scenarios. It uses the built-in RTD formulas of Microsoft Excel, which means that you can use cell references etc. as placeholders in your spreadsheets like with any other Excel formula.



H6 =RTD("profrtd",,"History","{514562},DAILY,open,E=31032011",$L6)

	A	B	C	D	E	F	G	H	I	J	K
1											
2	**Live data**						**Historical data**				
3											
4	DAX 30						DAX : March 2011				
5	*Name*	*Last*	*Change*	*Vol*	*Time*		*Date*	*Open*	*High*	*Low*	*Close*
6	ADIDAS AG NA O.N.	44.72	0.075	524828	2:26:32 PM		3/1/2011	7309.8	7356.33	7193.78	7223.3
7	ALLIANZ SE VNA O.N.	100.35	-0.35	794261	2:27:11 PM		3/2/2011	7169.04	7202.58	7122.69	7181.12
8	BASF SE NA O.N.	62.16	0.27	1290959	2:27:10 PM		3/3/2011	7225.23	7294.04	7191.14	7225.96
9	BAY.MOTOREN WERKE AG ST	60.49	-0.73	1532567	2:27:16 PM		3/4/2011	7262.54	7311.25	7157.12	7178.9
10	BAYER AG NA	56.89	0.7	1574449	2:27:14 PM		3/7/2011	7137.81	7270.81	7127.31	7161.93
11	BEIERSDORF AG O.N.	43.425	-0.13	278364	2:26:24 PM		3/8/2011	7211.06	7222.16	7072.47	7164.75
12	COMMERZBANK AG O.N.	5.445	-0.022	11191922	2:26:55 PM		3/9/2011	7177.55	7217.54	7109.26	7131.8
13	DAIMLER AG NA O.N.	51.6	0.01	2780176	2:26:56 PM		3/10/2011	7078.69	7109.71	7021.95	7063.09
14	DEUTSCHE BANK AG NA O.N.	42.505	-0.245	3856863	2:27:14 PM		3/11/2011	7002.26	7014.02	6963.31	6981.49
15	DEUTSCHE BOERSE NA O.N.	52.08	-0.73	1079661	2:26:55 PM		3/14/2011	6896.31	6946.44	6847.94	6866.63

With TeleTrader Professional RTD, you can include the current quotes of several symbols in your spreadsheets, or retrieve historical data and display it in a table. The necessary RTD formulas can be created by copying live, updating quote data from TeleTrader Professional to Microsoft Excel. The syntax for RTD links gives you great flexibility in formulating your own requests.

Note For some examples of how to use TeleTrader Professional RTD, a sample Excel sheet is included in the installation: Right-click the RTD tray icon and choose **Help > Samples** to open it. See also Samples for the RTD Component on page 403.

Automatically started on opening your Excel spreadsheet

TeleTrader Professional RTD is started automatically in the background as needed. You can stop the connection manually when you don't need it anymore. If you have not installed TeleTrader Professional yet, you have to download and install it on your computer first.

Learn more:

- System Requirements for the RTD Component on page 382
- Downloading and Installing the RTD Component on page 383
- Starting and Stopping the RTD Connection on page 384
- Choosing the Time Zone for the RTD Component on page 388

Copy RTD links from TeleTrader Professional

You can use the **Copy** command from a price page, watch list, market depth, options matrix or time and sales document to copy live, updating quote data to Microsoft Excel. The RTD links can then be inserted into a Microsoft Excel Table with the function **Insert** or with the key combination Ctrl + V.

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In order to use RTD when copying data from TeleTrader Professional documents to your spreadsheet software, you have to set the DDE/RTD format under **Tools > Options > Price Page** to **Microsoft Office RTD** (see Price Page Settings on page 344).

Learn more:

- Setting up an RTD Link with Live Data on page 388

Retrieve live, updating quote data, market depth and fundamental data

With live RTD links, you can retrieve a wide variety of data fields for a security, ranging from live, updating quote data to live market depth data and fundamental data (including company information and balance sheet data).

```
=RTD("ProfRTD";;"Live";"{949843},Last")
```

Learn more:

- Setting up an RTD Link with Live Data on page 388
- Tips and Examples for Retrieving Live Data on page 392

Retrieve historical data, intraday and tick data

You can also display historical data for a security. Choose the time region that should be covered and the data compression / period, which can range from raw / tick-by-tick data over intraday bars to daily, weekly and monthly data.

```
=RTD("ProfRTD";;"History";"{829802},Daily, PCLOSE, E=23092008";1)
```

Learn more:

- Setting up an RTD Link with Historical Data on page 393
- Tips and Examples for Retrieving Historical Data on page 396

Search for symbol IDs using ISIN, WKN, ticker or name of the symbol

You can search for symbol IDs that are needed in other RTD formulas by using the symbol's ISIN, WKN, ticker or name. Additional search options like exchange name, currency, strike price and expiration date are also available. The search result will be shown with its symbol ID, allowing the user to reference the ID in other RTD requests (cell references).

```
=RTD("ProfRTD";;"Lookup";"074305, Vienna")
```

Learn more:

- Searching for Symbols with RTD on page 397
- Tips and Examples for Looking Up Symbols on page 398

Alternative to using TeleTrader Professional RTD

The alternative to using RTD is the older DDE protocol (Dynamic Data Exchange). As RTD is a newer technology than DDE, RTD performs better in most cases. RTD also uses standard Excel syntax, which means that you can use cell references in RTD formulas to make them re-usable across your spreadsheet.

For information about using **Microsoft Office DDE**, see DDE – Dynamic Data Exchange with Excel / Open Office on page 366.

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Setting Up the RTD Component

If Microsoft Excel is not available on your computer at the time that you install TeleTrader Professional, the RTD component is not included with the installation. To add it to your computer at a later time, you have to download and install TeleTrader Professional RTD on your computer before you can use RTD links. Before you start the installation, make sure that your computer meets the system requirements.

After the installation is finished, TeleTrader Professional RTD is started automatically in the background as needed. You can stop the connection manually when you don't need it anymore.

It is also recommended that you choose a proper time zone for all time stamps that are received via TeleTrader Professional RTD. By default, the time zone is set to **Local Time**.

If you experience problems with retrieving data in Microsoft Excel, see also Troubleshooting the RTD Component on page 404.

System Requirements for the RTD Component

Please make sure that your computer meets the system requirements for running TeleTrader Professional RTD.

Computer

Hardware	PC with 1,66 GHz or higher
Operating System	Windows 8, Windows 7 (recommended), Windows Vista, Windows XP All operating systems need Microsoft .NET Framework 4.0 and the most recent service packs.
Microsoft Excel	32-bit and 64-bit versions of Microsoft Excel are supported The TeleTrader Professional Add-in for Excel can only be used with Excel 2007 (or higher). With older Excel versions, you will be able to use RTD links, but you will not be able to use the graphical user interface of the Add-in.
Microsoft Office Add-Ins	*Microsoft Office Primary Interlop Assembly* is a pre-requisite for running TeleTrader Professional RTD. If this package is not installed yet, you will be prompted to do so during the installation process. *Microsoft VSTO 2010 Runtime* is a prerequisite for running the TeleTrader Professional Add-in for Excel. If you don't install this package, you will still be able to use RTD, but you will not be able to use the graphical user interface of the Add-in.
RAM	1 GB We recommend at least 2 GB for large time series.
Free Disk Space	ca. 5 MB of free hard drive space for a complete installation
Internet Connection	Persistent Internet connection with a recommended bandwidth of at least 64 kbps

Firewalls

- Port 80 and 2088 need to be open for TCP/IP traffic to the market data server (allowing HTTP traffic is not sufficient)
- Some functions (automatic updates, fundamental data) require a HTTP connection
- Personal firewalls have to be set up to allow traffic for TeleTrader Professional RTD. You can either enable all outgoing traffic from TeleTrader Professional RTD, or enable outgoing TCP traffic on port 2088 and HTTP traffic on port 80

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Antivirus software

For better performance, we recommend configuring your antivirus software so that it does not scan the TeleTrader Professional RTD folders. The folders are usually located at the following paths:

- Program data: *C:\Program Files\Teletrader\Professional RTD Server*

The TeleTrader Professional RTD executable file is called *ProfRTD.exe*.

Downloading and Installing the RTD Component

If Microsoft Excel is not available on your computer at the time that you install TeleTrader Professional, the RTD component is not included with the installation. To add it to your computer at a later time, you have to download and install the software TeleTrader Professional RTD. TeleTrader Professional RTD is then started automatically in the background as needed. Before you start the installation, make sure that your computer meets the system requirements.

This section will show you how to download and install TeleTrader Professional RTD on your computer.

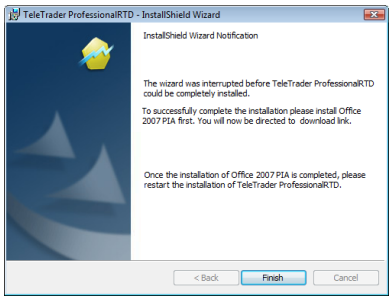
To download and install TeleTrader Professional RTD

- Go to the RTD download section at http://professional.teletrader.com/rtd.
- Depending on your browser, you can either save the setup file, or run it directly. You might have to start the installation by navigating to the location where you saved the file and double-clicking the downloaded file.
- A security warning might appear. Click **Run**. Confirm the request of the Windows User Account Control by clicking **Continue**.
- The **InstallShield Wizard** is started. This setup wizard will guide you through the installation in a few steps. Just follow the instructions on the screen.

Note **TeleTrader Professional** RTD needs the **Microsoft Office PIA** package to be installed on your computer. If this package is not installed yet, you have to download and install it first before carrying on with the installation of TeleTrader Professional RTD. Follow the instructions below to install the PIA package.

To install the Microsoft Office PIA package

- During the installation of TeleTrader Professional RTD, you might be requested to download and install the Microsoft Office PIA package.


TeleTrader ProfessionalRTD - InstallShield Wizard
InstallShield Wizard Notification
The wizard was interrupted before TeleTrader ProfessionalRTD could be completely installed.
To successfully complete the installation please install Office 2007 PIA first. You will now be directed to download link.
Once the installation of Office 2007 PIA is completed, please restart the installation of TeleTrader ProfessionalRTD.
< Back
Finish
Cancel

- Click **Finish** to start downloading the PIA installation file.
- Double-click the downloaded file *PrimaryInterlopAssembly.exe*.

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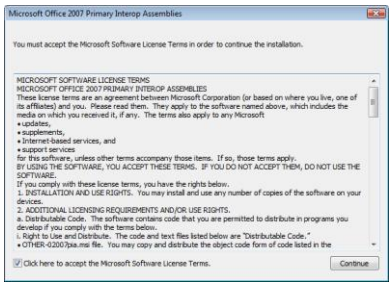
- In the following dialog, accept the Microsoft License Terms and click **Continue**.


Microsoft Office 2007 Primary Interop Assemblies
You must accept the Microsoft Software License Terms in order to continue the installation.
Click here to accept the Microsoft Software License Terms.
Continue

- Choose a folder for saving the extracted PIA package. As soon as the extraction is completed successfully, you will be notified by a message window.
- Navigate to the folder where you extracted the PIA package and double-click the MSI file (for example *o2007pia.msi*).
- Now you can resume installing TeleTrader Professional RTD. Double-click the downloaded RTD setup file to start the **InstallShield Wizard**.

Starting and Stopping the RTD Connection

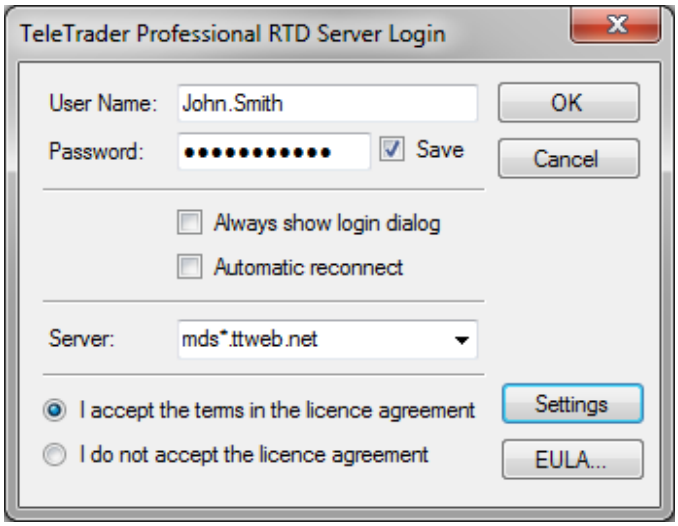
TeleTrader Professional RTD is started automatically when needed, for example when opening an Excel spreadsheet containing RTD links. You can also manually start the RTD connection, if necessary.

You can see if the RTD connection is active in your Windows system tray:

The RTD connection stays active even if you close TeleTrader Professional or the spreadsheet that contains the RTD links. You can stop the connection manually if you don't need it anymore.

To start the RTD connection manually

- Click on the **Windows Start** button, and then select **All Programs > TeleTrader Professional > TeleTrader Professional RTD Server**.
- If you are using the RTD connection without an active installation of TeleTrader Professional, you will be asked to log in with your user name and password.



- Select the **Save** check box so you don't have to enter your user name and password again the next time you log in.

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- Select **Always show login dialog** if you want to display the login dialog on every start of the RTD Server. If you clear this option, the login dialog will not be displayed again on future logins, and you will be automatically logged in using your last login information. You can however still bring up the login dialog by right-clicking the RTD icon in the Windows system tray and selecting first **Disconnect** and then **Connect**.
- Select **Automatic reconnect** if you want RTD to automatically reconnect to the Market Data Server in case the connection is lost.
- Select **I accept the terms in the licence agreement** radio button. If you want to, you can read the End User License Agreement by clicking the **EULA** button.

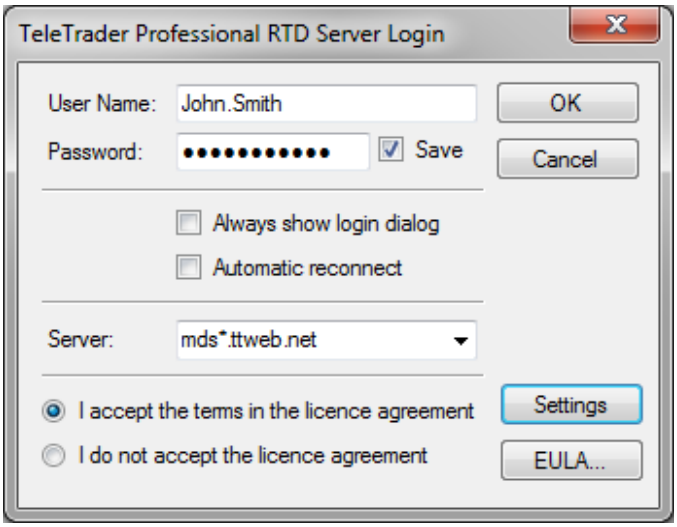
To stop the RTD connection manually

- In the Windows system tray, right-click the RTD icon:

- Select **Disconnect** if you want to stop retreving data without closing RTD Server.
- Select **Exit** to close RTD Server.

RTD Server Login Dialog

On each start, TeleTrader Professional RTD must connect to the Market Data Server (MDS) to collect real-time / historical quotes and fundamental data from multiple data feeds. On the first start of TeleTrader Professional RTD, the login dialog is shown automatically. On future logins, the login dialog will only be displayed when the option **Always show login dialog** is selected.



Control	Description
User Name	Enter the TeleTrader Professional user name that you have received via e-mail.
Password	Enter the password that you have received via e-mail.
Save	Check to save your login data. The next time you log in, you don't have to enter your user name and password again.
Always show login dialog	Check to display the TeleTrader Professional RTD Server Login dialog on each start
Automatic reconnect	Check to let TeleTrader Professional RTD try to reestablish the connection automatically in case the connection is lost.
Server	Enter the address of the TeleTrader Market Data Server. The default setting is *mds*.ttweb.net*.

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Settings	Click on this button to change the connection settings (see Connection Settings in the RTD Server Login Dialog on page 386).
I accept the terms in the licence agreement **(I do not accept the licence agreement)**	You have to accept the terms in the licence agreement to be able to receive data.
EULA	Click on this button to view the End User Licence Agreement.

Connection Settings in the RTD Server Login Dialog

In the TeleTrader Professional RTD Server Login dialog, you can change the connection settings that are used to connect to the Market Data Server to collect quotes. We recommend to use the default settings and only change those if you have problems connecting to the TeleTrader servers.

To access the **Connection Settings** dialog, click **Settings** in the TeleTrader Professional RTD Server Login dialog.

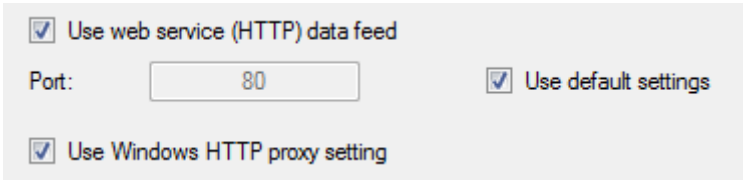
Market Data Server settings

These settings control the connection to the Market Data Server. We recommend to always use the default settings.

Control	Description
Ports	Port numbers of the incoming connection from the remote server. Multiple ports must be separated with a comma. These ports must be open for the connection to the Market Data Server. Defaults ports are *2088* and *80*.
Use default setting	Check to use the default port settings. Clear to enter your own port settings.

Web Service settings

These settings are used for the collection of fundamental data (for example company figures and master data), and not for real-time quote data feeds.



Control	Description
Use web service (HTTP) data feed	Check to enable the web service for fundamental data.
Port	Port number of the web service. This port must be open for the collection of fundamental data. Default port is *80*.
Use default settings	Check to use the default port settings. Clear to enter your own port settings.

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Use Windows HTTP proxy setting	Check to use the proxy settings of Internet Explorer.

Reconnection settings

You can define how TeleTrader Professional RTD reacts if it loses the connection to the Market Data Server.

Control	Description
Reconnect after x sec.	Enter the amount of seconds after which TeleTrader Professional RTD tries to reconnect to the Market Data Server.
Try to connect x times	Enter the number of times TeleTrader Professional RTD tries to reconnect.
Limitless	Check to let TeleTrader Professional RTD try to reconnect an unlimited number of times (until the connection is reestablished). Clear to let TeleTrader Professional RTD try to reconnect only for the number of times defined above (even if the connection cannot be established).

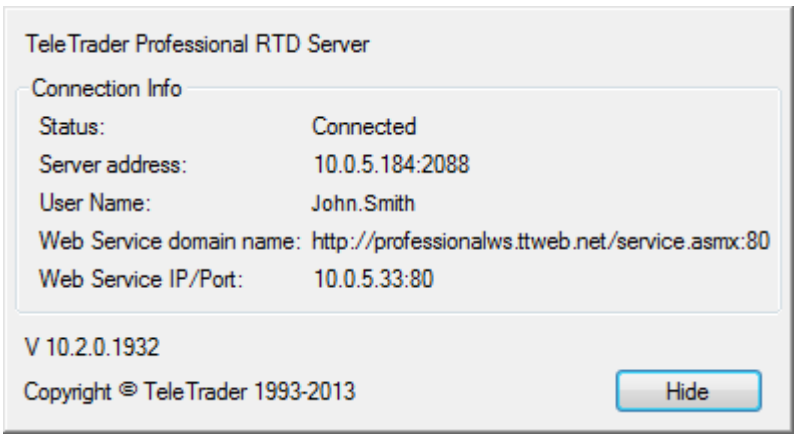
Note Reconnection settings will be applied only if the option **Automatic Reconnect** is selected in Tele Trader RTD Server Login dialog.

Monitoring the Connection Status

You can monitor the status of the connection to the Market Data Server, including software versions and login information, by right-clicking the RTD icon.

To view detailed connection status information

- In the Windows system tray, right-click the RTD icon and select **About**.



Label	Description
Status	General status of the connection (*Connected* or *Disconnected*)
Server address	IP address and port of the connected Market Data Server (quote data)
User Name	Currently logged-in user

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Web Service domain name	Domain name of the connected web service (fundamental data)
Web Service IP/Port	IP address and port of the connected web service

Choosing the Time Zone for the RTD Component

You can choose a certain time zone for all timestamps that are received via TeleTrader Professional RTD (for example, the fields Date, Time and DateTime). All time definitions of requests for historical data (start / end date and time) must be made in the chosen time zone.

To choose a time zone

- In the Windows system tray, right-click the RTD icon:

- Under **Time Zone**, select the zone that you want to use:

Local Time	Select to use the local time of your computer for all time values.
GMT	Select to use Greenwich Mean Time for all time values.
Exchange Time	Select to use the local time of the exchange for all time values.
Custom Time	Select to use a custom time in increments or decrements of 30 minutes from GMT for all time values.

Setting up an RTD Link with Live Data

The following examples show you how to set up RTD links with live data in Microsoft Excel.

However, in most cases it is easier and more comfortable to simply use the **Copy** command from your Professional document to create a live RTD link (see below). An RTD link for the displayed symbol or a list of symbols is then created automatically. The RTD links can then be inserted into a Microsoft Excel table with the function **Insert** or with the key combination CTRL + V.

In order to use RTD when copying data from TeleTrader Professional documents to your spreadsheet software, you have to set the DDE/RTD format under **Tools > Options > Price Page** to **Microsoft Office RTD** (see Price Page Settings on page 344).

If you want to use historical data in your spreadsheet, or a combination of historical and current data (for example, the last 10 ticks of a symbol), you have to use another type of RTD link: See Setting up an RTD Link with Historical Data on page 393.

To copy live, updating quote data to Microsoft Excel

- Open a price page, watch list, market depth, options matrix or time and sales document in TeleTrader Professional that shows the data that you want to copy. See also Opening Symbols on page 63 and Adding and Removing Columns on page 80.
- Select all cells that you want to copy to Microsoft Excel. You can highlight them with the mouse, or select complete rows or columns (see also Selecting Rows or Columns of a Price Page on page 89).
- Right-click on the selected cells and choose **Copy**.

> **Note** When you want to copy data from a market depth document, right-click in the summary view of the market depth document and choose **Copy** to copy all data.

- Open a Microsoft Excel spreadsheet.

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- Paste the data that you have copied into Excel. For example, you can use the shortcut CTRL + V.
- The data that you have copied will now be displayed in the Excel spreadsheet. It will be updated whenever new ticks arrive.

Note By default, the column headings of the price page are copied along as well. You can disable this setting under **Tools > Options > Price Page** (see Price Page Settings on page 344).

To request live quote data manually in Microsoft Excel (example)

- Open a Microsoft Excel spreadsheet.
- In the cell where you want the data field to appear, type (or copy) the following formula:

```
=RTD("ProfRTD";;"Live";"{949843},Last")
```

- The requested data will appear in the Microsoft Excel cell. The request above will for example fetch the *Last* price of the EURUSD currency pair.

Syntax for RTD Links to Live Data

In your Microsoft Excel spreadsheet, certain formulas are used to create the RTD links. If you use the **Copy** command, all RTD links are created automatically for you. If you set up the links manually, you have to use the following syntax to request live quote data:

```
=RTD("ProfRTD";;"Live";"<Symbol>,<Field>")
```

Note The character you have to use for separating the different arguments of the RTD function (shown as a semicolon **;** above) depends on the regional configuration of your operating system. Under Windows, you can change this configuration in the **Control Panel**.

Symbol	Internal identification of the symbol. You can either use the symbol identification number (for example `{829802}`) or its unique name (for example `MSFT_1061SPC`). To find out the identification of a symbol, click in the row of the symbol in a price page and press F2. Identification number and unique name can also be displayed in the price page columns **TID** and **TUN** or in the **Chart Properties** dialog for a symbol. You can also use the `Lookup` command to search for a symbol ID within Excel (see Searching for Symbols with RTD on page 397).
Field(s)	Name of the data field(s) that should be retrieved. See Available Field Names on page 405.

Market Depth Fields	For market depth data, the following field names can be used – the number in square brackets signifies the depth level, starting with 0:
	`MDBidSize[depth_level]`
	`MDBidCount[depth_level]`
	`MDBid[depth_level]`
	`MDAsk[depth_level]`
	`MDAskSize[depth_level]`
	Note It is not possible to display market depth data from NASDAQ via RTD.

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Example for retrieving the Bid price at the third depth level:
`=RTD("ProfRTD";;"Live";"{458812},MDBid[2]")`

VWAP Fields

The Volume Weighted Average Price (VWAP) of a stock over a specified market period is defined as the average price paid per share during that period (price of each transaction in the market weighted by its volume). It is calculated from the volumes and prices of all trades during a certain period of time. See also Adding, Removing and Customizing the VWAP Columns on page 98.

You can retrieve VWAP data with an RTD link. The VWAP data is calculated for a certain time period, according to your request. Use the following field syntax:

`VWAP(Type,DateTimeF,DateTimeT,VolF,VolT,PriceF,PriceT)[OutputName]`

`Type`	Time period used for VWAP calculations: This can be `D` (Daily), `LH` (Last Hour), `C` (Custom), `N` (None) or `F` (Freeze).
`DateTimeF/T`	Begin and end date and time of a custom time period (`C`) in ISO format `YYYY-MM-DDThh:mm:ss`
`VolF/T`	Lower and upper boundaries for the volume range (optional)
`PriceF/T`	Lower and upper boundaries for the price range (optional)
`OutputName`	Defines the VWAP value that should be returned: `Price`, `StdDev`, `TotalVol`, `AvgVol`, `NumTicks`, `DateF`, `DateT`, `TimeF`, `TimeT`, `VolF`, `VolT`, `PriceF`, `PriceT`

Examples for retrieving VWAP data:
`=RTD("ProfRTD";;"Live";"{458757},VWAP(LH)[StdDev]")`
`=RTD("ProfRTD";;"Live";"{458757},VWAP(C,2010-04-08T22:00:00,2010-04-09T10:00:00,0,100000,40.00,45.00)[Price]")`

Study Fields

TeleTrader Professional offers a large amount of analysis tools (studies) to calculate indicators and signals. Depending on the study, one or more columns are necessary for displaying the study data for a symbol. You can choose the data compression that should be used for the study (Daily, Weekly, Monthly, Intraday or Tick by Tick data) and adapt the study's parameters. For a list of all available studies and their parameters, see the Study Reference.

To retrieve study data with an RTD link, use the following field syntax:

`AT(FunctionName,{Base1Name:Base1Symbol}...{BaseXName:BaseXSymbol},Compression,{FID1}...{FIDn},{Param1Name:Param1Value}...{ParamXName:ParamXValue},TickOrBar,LastNBars)[OutputEntity:OutputProperty]`

`FunctionName`	Name of study function (for example `movs` for *Moving Average Simple*)
`Base1Name`	Usually there is only one base symbol which is called `Source`. For some studies that have more than one base symbol, the appropriate names for the different bases are listed in the Study Reference.
`Base1Symbol`	Symbol identification number of the base symbol, for example `{829802}`.
`Compression`	Data compression of the time series that is used to calculate the study values. Possible values are: `Daily`, `Weekly`, `Monthly`, `x Minutes` (for Intraday compressions), `Tick by Tick`.
`FID1`	Price that is used for calculation of the study. Possible values are: `Open`, `Close`, `High`, `Low`, `Volume`, `OI` Some studies use all price values; in that case, you have to use `{All}`.
`Param1Name`	Name of the study's first parameter as listed in the Study Reference, for

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example `period`.
If a study has more than one parameter, they all have to be listed.

`Param1Value` Value assigned to the study's first parameter, for example `21`.

`TickOrBar` Define whether the study should be recalculated on each new tick (`tick`) or on each new bar (`bar`). Use `bar` if you are experiencing performance problems.

`LastNBars` Time region that is used for calculating the study, for example `21`. This setting influences the amount of historical time series data that is downloaded for the base symbol The appropriate setting often depends on the currently set study parameters, such as the period of a Moving Average. If you add too little history, the study might not be calculated (leading to an empty value in the study column); If you add too much history, this can affect performance.

`OutputEntity` Name of the study's output entity, usually similar to the function name, for example `MovS`.

`OutputProperty` Name of the study's output property (*Upper*, *Lower*, *Price* etc.). In case of Line studies, `OutputProperty` is fixed to `Value` since there is only one property.

Example for retrieving study data with one result ("Line"):

```
=RTD("profrtd";;"Live";",AT(movs,{Source:{459237}},Daily,{Close},{peri
od:21}{shift:0},tick,21)[MovS:Value]")
```

Example for retrieving study data with multiple results ("Multiple Lines", "Areas"):

```
=RTD("ProfRTD";;"Live";",AT(boll,{Source:{459237}},Tick by
Tick,{High},{period:20}{deviation1:2}{deviation2:-
2},tick,20)[Boll:Upper]")
=RTD("profrtd";;"Live";",AT(boll,{Source:{459237}},Tick by
Tick,{High},{period:20}{deviation1:2}{deviation2:-
2},tick,20)[Mid:Value]")
=RTD("profrtd";;"Live";",AT(boll,{Source:{459237}},Tick by
Tick,{High},{period:20}{deviation1:2}{deviation2:-
2},tick,20)[Boll:Lower]")
```

Example for retrieving study data with markers – values will only be displayed if the marker appears on the current bar ("Candlestick Patterns", "Buy/Sell Signals"):

```
=RTD("profrtd";;"Live";",AT(atr_trail,{Source:{458822}},60
Minutes,{All},{TrailTypeMod:True}{Period:21}{Factor:1.5}{InitialMonth:
1}{InitialDay:1}{InitialYear:2009}{FirstTrade:1}{ShowTraderMarks:True}
{ShowLine:True},tick,142)[BuySell:Price]")
=RTD("profrtd";;"Live";",AT(atr_trail,{Source:{458822}},60
Minutes,{All},{TrailTypeMod:True}{Period:21}{Factor:1.5}{InitialMonth:
1}{InitialDay:1}{InitialYear:2009}{FirstTrade:1}{ShowTraderMarks:True}
{ShowLine:True},tick,142)[BuySell:Text]")
=RTD("profrtd";;"Live";",AT(atr_trail,{Source:{458822}},60
Minutes,{All},{TrailTypeMod:True}{Period:21}{Factor:1.5}{InitialMonth:
1}{InitialDay:1}{InitialYear:2009}{FirstTrade:1}{ShowTraderMarks:True}
{ShowLine:True},tick,142)[BuySell:Direction]")
```

Example for retrieving study data with multiple base symbols:

```
=RTD("profrtd";;"Live";",AT(indCorrelation,{Source1:{459237}}{Source2:
```

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```
{458757}},Daily,{Close}{Close},{period:5}{shift:0},tick,5)[Corr:Value]
")
```

In case of study fields that exceed Microsoft Excel's limit of 200 characters, the field can be broken into several parts of formula where each part begins with **AT+**.

Example for formulas that exceed maximum number of characters:

```
=RTD("profrtd";;"Live";",AT(tmv,{Source:{458757}},Daily,{All},{Keltner
Period:20}{ShowVolatilityAndTrend:True}{UseLindaRaschkeKeltner:False}{
ADXPeriod:10}{SMAPeriod:8}{ShowTrendStrengthAndDirection:True}{CCIPeri
od:13}{UpperL)";"AT+(evel:100}{LowerLevel:-
100}{ShowMomentumAndTrend:True}{ShortTermVolumePeriod:1}{LongTermVolum
ePeriod:20}{VolumeOscSpikeThreshold:50}{ShowVolumeOscillationExtremes:
True},tick,131)[KeltnerMidLine:Value]")
```

Tips and Examples for Retrieving Live Data

Note For more examples of how to use TeleTrader Professional RTD, a sample Excel sheet is included in the installation: Right-click the RTD tray icon and choose **Help > Samples** to open it. See also Samples for the RTD Component on page 403.

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Retrieving live quotes

Retrieve live quotes for the EURUSD currency pair:

```
=RTD("ProfRTD";;"Live";"{949843},Last")
```

Using cell references

In RTD formulas, you can use references to other cells, which makes your formulas reusable – for example, you can substitute the symbol name with a cell reference (the correct symbol ID should be entered manually into the referenced cell A1):

```
=RTD("ProfRTD";;"Live";A1&",Last")
```

Using a wrapper function for RTD requests

For more ease-of-use when typing a lot of RTD formulas manually, you can define a wrapper function using Microsoft Visual Basic/VBA. The following example shows the wrapper function `GetData`:

```
Function GetData(SymbolField)
     GetData = Application.WorksheetFunction.RTD("ProfRTD", Null,
"Live", SymbolField)
End Function
```

You can then use the function `GetData` instead of RTD formulas in your worksheets using the following syntax:

```
=GetData("<Symbol>,<Field>")

=GetData("{949843},Last")
```

Setting up an RTD Link with Historical Data

You can also request historical quote data from the Market Data Server and display it in Microsoft Excel. To do so, you must use an RTD formula in the cell of your spreadsheet where you want to show the data.

To request historical quote data in Microsoft Excel (example)

- Open a Microsoft Excel spreadsheet.
- In the cell where you want the data field to appear, type (or copy) the following formula:

```
=RTD("ProfRTD";;"History";"{829802},Daily, PCLOSE, E=23092008";1)
```

- The requested data will appear in the Microsoft Excel cell. The request above will for example fetch the *Close* price of the Microsoft stock on September 23rd, 2008.

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To request historical quote data in Microsoft Excel using Excel Add-in

Besides manually generating RTD links, you can also generate RTD links for retrieving the historical data using TeleTrader Professional Add-in for Excel.

- Open a Microsoft Excel spreadsheet.
- Click the TeleTrader Professional ribbon in the Excel toolbar.
- Click the **RTD Server** toolbar button and then the **Show** button.
- In the **Formula Generator** pane define: **Symbol** name, **Interval**, **Time Series** and **Quote Elements**.
- Select one cell in the Excel spreadsheet and click the **Insert** button.
- Data will be displayed as an array to the right and down starting from the selected cell in the Excel spreadsheet.

Symbol	Defines the symbol identification number (for example `{829802}`) or unique name (for example `MSFT_0FSPC`) of the symbol for which you want to retrieve historical data. If you don't know the symbol's identification number, enter the symbol name, ISIN or WKN in the field and click the **Search** button. In the **Symbol Search Results** dialog, double-click the symbol that you want to use.
Interval	Choose the desired time compression for the historical data series.
Start Date	Choose the first date for the historical data series.
End Date	Choose the last date for the historical data series.
Records	Enter the number of retrieved historical data records – this setting defines the number of rows that will be added in the spreadsheet.
Display Time	Select this option to show time stamps in the **Start Date** and **End Date** date pickers (relevant when using Intraday data).
Sort Descending	Check to sort the historical data in descending order (newest data on top). Clear to sort the historical data in ascending order (oldest data on top).
Quote Elements	Select all quote elements that you want to show for the historical data series - this setting defines the number of columns that will be added in the spreadsheet.
Select All	Selects all quote element items.
Insert	Copies the RTD formulas into the Excel spreadsheet, based on the selections above.

Note

This interface can be used with Excel 2007 (or higher). During installation of the latest version of TeleTrader Professional, you might be required to download and install *Microsoft VSTO 2010 Runtime*, which is a prerequisite for running the TeleTrader Professional Add-in for Excel. If you don't install Microsoft VSTO 2010 Runtime, you will still be able to use RTD and DDE links, but you will not be able to use the graphical user interface of the Add-in.

Syntax for RTD Links to Historical Data

In a Microsoft Excel spreadsheet, use the following syntax to request historical quote data with RTD:

```
=RTD("ProfRTD";;"History";"<Symbol>,<Period>,<Field>,<TimeRegion>
";<Index>)
```

Note

The character you have to use for separating the different arguments of the RTD function (shown as a semicolon **;** above) depends on the regional configuration of your operating system. Under Windows, you can change this configuration in the **Control Panel**.

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Symbol	Internal identification of the symbol. You can either use the symbol identification number (for example `{829802}`) or its unique name (for example `MSFT_0FSPC`). To find out the identification of a symbol, click in the row of the symbol in a price page and press F2. Identification number and unique name can also be displayed in the price page columns **TID** and **TUN** or in the **Chart Properties** dialog for a symbol. You can also use the `Lookup` command to search for a symbol ID within Excel (see Searching for Symbols with RTD on page 397).
Period	Data compression that you want to use. `MONTHLY` Use a monthly compression `WEEKLY` Use a weekly compression `DAILY` Use a daily compression `MINx` Use an intraday compression and specify the number of minutes (1-60) For example: `MIN5` – 5-minute compression `TICK` Use uncompressed data (tick by tick)
Field	Name of the data field that should be retrieved. The following fields are available: `DATE` Date for the retrieved record / data point `TIME` Time for the retrieved record / data point `LAST` Last price for the retrieved record / data point (for tick data only) `OPEN` Open price for the retrieved record / data point `HIGH` High price for the retrieved record / data point `LOW` Low price for the retrieved record / data point `PCLOSE` Last price for the retrieved record / data point `VOLLAST` Volume for the retrieved record / data point `OI` Open interest for the retrieved record / data point (for daily, weekly and monthly data only)
TimeRegion	You can specify a time region using a start date and end date. For different data compressions, you can define the time region in different ways. For *tick data*, use `NOW`. This specifies the current point in time. For *daily, weekly or monthly data*, enter the start or end dates for the time region that should be retrieved in the format `DDMMYYYY`. You can specify one or both dates. When you only use a start date, the end date is implicitly set to the current date/time. `S=<DateTime>` Start date `E=<DateTime>` End date For *intraday data*, specify start or end of the time region in the date/time format `DDMMYYYYhhmm`.
Index	The RTD functionality in Excel can only connect single cells to a data source. If you need more than one cell of data for the same symbol and time region (for example, the last 30 ticks of a symbol), you can use the **Index** parameter. An index of 1 means that the data for the specified time / date is retrieved. An index of 2 means that the data from the last bar before the specified end date is retrieved, and so on.

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Tips and Examples for Retrieving Historical Data

For using cell references and wrapper functions, see the Tips and Examples for Retrieving Live Data on page 392.

Note For more examples of how to use TeleTrader Professional RTD, a sample Excel sheet is included in the installation: Right-click the RTD tray icon and choose **Help > Samples** to open it. See also Samples for the RTD Component on page 403.

Retrieving daily data

Retrieve the volume of the Microsoft stock for 3 days counting backwards from April 5th, 2006 in a daily compression (each formula needs to be entered in a different cell):

```
=RTD("ProfRTD";;"History";"{829802},Daily,VOLLAST,E=05042006";1)
=RTD("ProfRTD";;"History";"{829802},Daily,VOLLAST,E=05042006";2)
=RTD("ProfRTD";;"History";"{829802},Daily,VOLLAST,E=05042006";3)
```

Retrieving intraday data

Retrieve the *Close* price of 1-hour-bars (60 minutes) for the EURUSD currency pair, from March 30th, 2011, 8:00 h to noon. The first cell should contain the following formula – it retrieves the *Close* price of the 12:00 bar:

```
=RTD("ProfRTD";;"History";"{3212164},Min60,PCLOSE,S=300320110800,
E=300320111200";1)
```

To retrieve the rest of the data (8:00, 9:00, 10:00 and 11:00 bars), the following formulas should be used (notice that the Index count is going up for each cell):

```
=RTD("ProfRTD";;"History";"{3212164},Min60,PCLOSE,S=300320110800,
E=300320111200";2)
=RTD("ProfRTD";;"History";"{3212164},Min60,PCLOSE,S=300320110800,
E=300320111200";3)
=RTD("ProfRTD";;"History";"{3212164},Min60,PCLOSE,S=300320110800,
E=300320111200";4)
=RTD("ProfRTD";;"History";"{3212164},Min60,PCLOSE,S=300320110800,
E=300320111200";5)
=RTD("ProfRTD";;"History";"{3212164},Min60,PCLOSE,S=300320110800,
E=300320111200";6)
```

As there is no more data available for this time region, the last cell (with index 6) will show `n/a` (not available).

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Retrieving tick data

Retrieve the last five ticks of the Dow Jones Industrial Average – note that the data will NOT update automatically when new ticks come in (use live RTD links for ticking data):

```
=RTD("ProfRTD";;"History";"{394917},TICK,LAST,now";1)
=RTD("ProfRTD";;"History";"{394917},TICK,LAST,now";2)
=RTD("ProfRTD";;"History";"{394917},TICK,LAST,now";3)
=RTD("ProfRTD";;"History";"{394917},TICK,LAST,now";4)
=RTD("ProfRTD";;"History";"{394917},TICK,LAST,now";5)
```

Searching for Symbols with RTD

You can search for symbol IDs that are needed in other RTD formulas by using the symbol's ISIN, WKN, ticker or name. Additional search options like exchange name, currency, strike price and expiration date are also available. The search result will be shown with its symbol ID, allowing the user to reference the ID in other RTD requests (cell references).

To search for symbols in Microsoft Excel (example)

- Open a Microsoft Excel spreadsheet.
- In the cell where you want the symbol ID to appear, type (or copy) the following formula:

```
=RTD("ProfRTD";;"Lookup";"Microsoft,NASDAQ")
```

- The symbol ID of the Microsoft stock on NASDAQ (`{829802}`) will be shown in the cell. If there is more than one search result, the number of results will be shown and you will need to refine your search.
- You can now use this symbol ID in another RTD formula using cell references. This means that you use the name of the Excel cell (e.g. `A1`) instead of the symbol ID for retrieving quote data, for example:

```
=RTD("ProfRTD";;"Live";A1&",Last")
```

- The request above will fetch the current *Last* price of the Microsoft stock on NASDAQ.

Syntax for Looking Up Symbols

In a Microsoft Excel spreadsheet, use the following syntax to look up symbol IDs with RTD:

```
=RTD("ProfRTD";;"Lookup";"<Identifier>, [<Exchange>,
<SymbolType>, <Currency>, <Strike>, <Expiration>, <Options>])
```

All parameters except `Identifier` are optional. If you want to skip a parameter, just add the comma, but leave out the value, for example:

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```
=RTD("profrtd";;"Lookup";"FDAX,Eurex,,,,122011")
```

Note The character you have to use for separating the different arguments of the RTD function (shown as a semicolon **;** above) depends on the regional configuration of your operating system. Under Windows, you can change this configuration in the **Control Panel**.

Identifier	The name, ticker, ISIN or local ID (for example WKN) of a security. This is used as the search term for looking up the symbol.
Exchange	Name of the exchange on which you want to search.

SymbolType	Type of symbol that you want to search for. The following types are available:
	`Stock`
	`Future`
	`Index`
	`Currency`
	`Warrant`
	`Bond`
	`Mutual Fund`
	`Interest Rate`
	`Option`
	`Put Option`
	`Call Option`
	`Certificate`

Currency	ISO code of the currency (for example EUR).
Strike	Strike price for options as a number.
Expiration	Expiration date (month/year) for options and futures in the format `MMYYYY`.
Options	Search options to control the search result. Currently two options are available: `EXACT` Only symbols whose ticker, name or ISIN match your search term (`Identifier`) exactly will be part of the search result. This option is useful when you use short tickers, for example `F`. `SHOW` The first returned symbol that matches your search term exactly will be shown as the result. This option is useful when you want to show a symbol ID in any case for the search result (instead of the message informing you that more than one symbol has been found).

Tips and Examples for Looking Up Symbols

For using cell references and wrapper functions, see the Tips and Examples for Retrieving Live Data on page 392.

Note For more examples of how to use TeleTrader Professional RTD, a sample Excel sheet is included in the installation: Right-click the RTD tray icon and choose **Help > Samples** to open it. See also Samples for the RTD Component on page 403.

Looking up an ISIN

If you look up an ISIN that is traded on several exchanges, it makes sense to add the exchange name in the formula – here, an ISIN is looked up on Xetra:

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```
=RTD("profrtd";;"Lookup";"DE000BASF111,Xetra")
```

Looking up a ticker symbol

When you look up the Ford ticker on NYSE, you should use the option `EXACT` to get a result immediately, since there are many tickers that start with F:

```
=RTD("profrtd";;"Lookup";"F,NYSE,,,,,EXACT")
```

Refining a search – step by step

Sometimes you have to refine your search based on the results that you get when looking for an options contract (search result is shown in red below – in Microsoft Excel, the search result will be shown in the same cell where you enter the formula).

Look up an option on Eurex, using the option's ISIN and type:

```
=RTD("profrtd";;"Lookup";"DE000BASF111,Eurex,Call Option")
Found 332 symbols. Please refine your search.
```

Add the strike price:

```
=RTD("profrtd";;"Lookup";"DE000BASF111,Eurex,Call Option,,48")
Found 13 symbols. Please refine your search.
```

Add the expiration date – this finally returns the symbol ID:

```
=RTD("profrtd";;"Lookup";"DE000BASF111,Eurex,Call
Option,,48,032012")
{28374544}
```

Symbol Syntax for Securities, Forwards and Continuous Contracts

As you know, when retrieving financial data with TeleTrader Professional RTD, you have to specify the internal identification of the symbol for which you want to get data. A symbol is the unique identification given to every security that is traded on an exchange or over-the-counter market (for example stocks, futures, options, indices and other types of securities).

You can either use the symbol identification number (for example `{829802}`) or its unique name (for example `MSFT_0FSPC`). To find out the identification of a symbol, you can use the `Lookup` command to search for a symbol ID within Excel (see Searching for Symbols with RTD on page 397), or you can display the necessary information in TeleTrader Professional price pages. The symbol ID is also visible in the **Chart Properties** dialog for a symbol.

For futures contracts, additional functionality is available to create forwards and continuous contracts.

Note We recommend to use symbol IDs, as unique names are subject to change (for example due to changes on the side of the exchanges).

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Symbol identification numbers and unique names

Note This requires an active subscription for TeleTrader Professional. If you don't have such a subscription, we recommend to use the `Lookup` command instead (see Searching for Symbols with RTD on page 397).

To display the symbol ID in price pages

- Start TeleTrader Professional and log in to your user account.
- Open a price page for the symbol(s) that you are interested in. You can for example use the QuickBar:
  - Click an icon in the **QuickBar**.
  - In the menu that appears, select the group that you want to open, for example **NASDAQ 100**.
  - In the submenu, select **All Symbols**.
  - All symbols of this group are displayed in a price page.
- Click in the row of the symbol and press F2. The symbol ID is displayed and can be copied from here.

To display symbol ID and unique name in separate price page columns

- Right-click the price page and choose **Properties**.
- In the **Price Page Properties** dialog, click **Columns**.
- From the **Available Columns** list, choose the column **TID** (for symbol ID) or **TUN** (for symbol unique name).

Note To search for a column, type its name into the **Filter** field below the list.

- Click the **>>** button.
- The chosen column is now moved to the **Displayed Columns** list and is visible in the price page.
- You can copy the symbol ID or unique name by right-clicking the cell and choosing **Copy as Text**.

Forwards and continuous contracts

For futures symbols, you can use special syntax to create:

- **Forwards**, which means that you always retrieve data for the current front month or any defined forward month.
- **Continuous contracts**, which means that you combine data from several futures contracts using various continuation settings to roll over from one contract to the next.

To create forwards and continuous contracts, you have to use the root symbol of a futures contract. Like with normal symbols, root symbols have both a root symbol identification number and a unique name.

You can look up the root symbol ID of various futures contracts under this link:
http://company.ttweb.net/futureOverview/

Alternativey, you can also display the root symbol's unique name (**TRUN**) in price pages, or copy forwards and continuous contracts from futures price pages in TeleTrader Professional by using F2.

To copy forwards and continuous contracts from price pages

- Open a price page with forwards or continuous contracts from the QuickBar, for example the **Commodities Futures Overview** or a similar price page.
- Click in the row of the continuous contract or forward that you want to use and press F2. The root symbol ID and correct syntax is displayed and can be copied from here. For more information about the syntax used for continuous contracts and forwards, see further below.

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To display the root symbol's unique name in a price page column

- Right-click the price page and choose **Properties**
- In the **Price Page Properties** dialog, click **Columns**.
- From the **Available Columns** list, choose the column **TRUN**.
- Click the **>>** button.
- The chosen column is now moved to the **Displayed Columns** list and is visible in the price page.
- You can copy the unique name by right-clicking the cell and choosing **Copy as Text**.

Syntax for forwards

Forwards are created by adding a pound sign # before the root symbol identification, and adding the desired forward month behind the symbol. The front month is given with 1-, the following month with 2- and so on.

`#Symbol`	Identification of the futures' root symbol. You can use the symbol ID or unique name.

`;1-`
`;2-`
`...`
	Forward month. `;1-` is the front month, `;2-` the following month and so on.

To get the front month of Soybeans on CBOT, e.g. ZS 05/2011, you can use the root symbol ID as copied from a price page in TeleTrader Professional:

```
#{866918};1-
```

The following month of Soybeans on CBOT, e.g. ZS 07/2011, can be specified in the following way:

```
#{866918};2-
```

The same request using the root symbol's unique name for Soybeans:

```
#F2:ZS_15U_SPC;2-
```

Syntax for continuous contracts

Continuous contracts are created by adding a percent sign % before the root symbol identification, and adding the desired continuation settings behind the symbol as shown in the table below.

`%Symbol`	Identification of the futures' root symbol. You can use the symbol ID or unique name.	
`;FGHJKMNQUVXZn-`	Contract expiration months that are used for creating the continuous contract. Can be any ordered subset of `FGHJKMNQUVXZ`. `n-` specifies the forward month, with `1-` being the front month, `2-` the following month and so on.	
Trigger	Condition that is used to trigger the rollover into the next contract.	
	`;TR0DnXM0`	**Expiration date**: Rollover will occur `n` days before the expiration date.
	`;TR0DnBMm`	**Beginning of month**: Rollover will occur `n` days after the start of the month in which the front month contract expires and `m` months before the expiration month.
	`;TR0DnEMm`	**End of month**: Rollover will occur `n` days before the end of the month in which the front month contract expires and `m` months before the

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		expiration month.
	`;TR1`	**Open Interest**: Rollover will be triggered when the open interest of the next contract is higher than the open interest of the front month contract.
	`;TR2`	**Volume**: Rollover will be triggered when the volume of the next contract is higher than the volume of the front month contract.
	`;TR3`	**Open interest and volume**: Rollover will be triggered when both open interest and volume of the next contract are higher than the open interest and volume of the front month contract.
	`;TR4`	**Open interest or volume**: Rollover will be triggered when either open interest or volume of the next contract are higher than the open interest or volume of the front month contract.
Timing	**Optional.** Determines when the rollover takes place as soon as the trigger condition is met.	
	`;T0`	**Anticipate**: Rollover will occur on the exact date that you specify in the trigger settings.
	`;T1`	**Align with price data**: Rollover will occur on the day after the rollover was triggered with an open interest or volume trigger. The day after the trigger will already start with the *Open* price of the new contract.
	`;T2`	**When known**: Rollover will occur two days after the rollover was triggered with an open interest or volume trigger. The day after the trigger will still show the prices of the old contract, the *Open* price of the new contract will start the following day.
	Default: `;T1`	
Pricing	**Optional.** Determines how the price difference between the old and the new contract is calculated to splice the contracts together.	
	`;PCC`	**Close old contract, close new contract**: The *Close* price of the current contract is compared with the *Close* price of the previous contract on the same day.
	`;POO`	**Open old contract, open new contract**: The *Open* price of the current contract is compared with the *Open* price of the previous contract on the same day.
	`;PCO`	**Close old contract, open new contract**: The *Open* price of the current contract is compared with the *Close* price of the previous contract from the previous day.
	Default: `;PCC`	
Accumulation	**Optional.** Determines if the prices of older contracts are adjusted to the current contract, and in what way.	
	`;AB`	**Back adjust**: The absolute price difference between the current contract and the previous contract is added to or subtracted from all older contracts.
	`;AP`	**Percentage adjust**: The price difference between the current contract and previous contract is calculated as a percentage. The prices of older contracts are adjusted by this percentage.
	`;AN`	**No adjustment**: The prices of older contracts are not adjusted to the price of the current contract. Gaps may be visible in the chart on rollover.
	Default: `;AB`	

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Confirmation	**Optional**. Details for the open interest or volume rollover conditions.
	`;C1` Roll on first trigger
	`;C2` Roll on second consecutive trigger
	`;C3` Roll on third consecutive trigger
	`;C4` Roll on fourth consecutive trigger
	Default: `;C1`

For example, the following FDAX continuous contract uses the root symbol ID of DAX Futures. Rollover will occur 2 days before the expiration date:

```
%{413719};FGHJKMNQUVXZ1-;TR0D-2XM0;T1;PCC;AB
```

If rollover should be triggered by open interest instead, a different trigger setting must be used:

```
%{413719};FGHJKMNQUVXZ1-;TR1;T1;PCC;AB;C1
```

Samples for the RTD Component

For some examples of how to use TeleTrader Professional RTD, a sample Excel sheet is included in the installation. It contains samples for retrieving live data, historical data, market depth data, VWAPs, studies and a complete field reference. You can easily copy the reusable samples to your own Excel tables and tweak them there.

To open the sample Excel sheet

- In the Windows system tray, right-click the RTD icon:
- Choose **Help > Samples**.

To copy RTD formulas with a fixed symbol

Samples with fixed symbols contain the symbol ID as a fixed value in the RTD formula. If you copy the formula, you must replace the sample symbol ID with the one that you want to use:

- Copy the formula from the sample document, for example:

```
=RTD("profrtd";;"Live";"{458757},Name")
```

- Insert the formula in the target document and replace the highlighted part with the new symbol ID, for example:

```
=RTD("profrtd";;"Live";"{49317942},Name")
```

To copy RTD formulas with a variable symbol

Samples with variable symbols take advantage of Excel's cell references: The RTD formula contains the symbol ID as a cell reference. You can enter a new symbol ID in the highlighted **Symbol ID** cell in the sample, and all formulas will automatically be calculated for this new symbol ID. If you copy the formulas, you can either include the cell that holds the symbol ID if you want to keep the flexibility, or you can replace the cell references in each RTD formula with the fixed symbol ID (using search & replace):

- Copy the data from the sample document and insert it in the target document

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- Search for the cell reference in all formulas, for example:

```
=RTD("profrtd";;"Live";B25&",Name")
```

- Replace with the symbol ID (in quotes), for example:

```
=RTD("profrtd";;"Live";"{458757}"&",Name")
```

To copy RTD formulas with a variable symbol with LOOKUP

For maximum flexibility, some samples use the `Lookup` command to determine the symbol ID used in the RTD formulas. These samples can be used if you don't know your security's symbol ID. Use the search form (LOOKUP) to find out the correct symbol ID; the found symbol ID is then used automatically (by using cell references) in all RTD formulas of the sample. When you want to copy the formulas, make sure that you convert the cell reference in the highlighted **Symbol ID** field to the actual symbol ID before copying the formulas:

- Click into the formula bar of the field that holds the symbol ID, e.g. `=C14`
- Press the F9 key to convert the cell reference to a fixed value, e.g. {458757}
- Copy the data from the sample document and insert it in the target document.
- If you did not include the Symbol ID cell while copying, you must now search & replace the cell references in the RTD formulas of the target document (see above).

> **Note** You can of course also copy the **LOOKUP** box to your target document, if you want to keep the flexibility of a sample.

Troubleshooting the RTD Component

If you experience problems with retrieving data in Microsoft Excel, you will find tips about recommended settings in Microsoft Excel below to solve some of the most common problems.

Possible Issues in Microsoft Excel

Microsoft Excel only refreshes RTD data periodically, based on a system-wide throttle interval named `Excel.Application.RTD.ThrottleInterval`. This interval is automatically set to 100 milliseconds on installation of TeleTrader Professional RTD in the registry (exception: If the throttle interval has already been set by another application to a value lower than 100, it is left unchanged). You can configure the throttle interval (in milliseconds) by using either Visual Basic/VBA or the registry:

- With Visual Basic / VBA, you can set `Application.RTD.ThrottleInterval` in immediate mode or in a startup handler.
- In the registry, you can change the registry value:
  HKEY_CURRENT_USER\Software\Microsoft\Office\10.0\Excel\Options\RTDThrottleInterval (for Excel 2002)
  HKEY_CURRENT_USER\Software\Microsoft\Office\11.0\Excel\Options\RTDThrottleInterval (for Excel 2003)
  HKEY_CURRENT_USER\Software\Microsoft\Office\12.0\Excel\Options\RTDThrottleInterval (for Excel 2007).

For more information, please refer to the following Microsoft FAQ item from MSDN:

http://msdn.microsoft.com/en-us/library/aa140060%28office.10%29.aspx#odc_xlrtdfaq_howconfigrtdthrottle

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Copying Calculated Watch List Columns

If you want to copy the content of calculated watch list columns like **Total P/L** or **P/L Perc** to Excel, you have to change the formula options in the **Excel Options** dialog to use a different reference style. Click **Formulas**, and under **Working with formulas** select the option **R1C1 reference style**.

In some cases, the calculated values of watch lists are not rounded correctly, resulting in displayed numbers like for example *1.78E-15*. In this case, you have to highlight the affected cells in Excel. Then, right-click on the selection and click **Format Cells**. Choose **Number** and the amount of decimal places that you want to show. The calculated values should then be rounded according to your settings.

Microsoft Excel 2007 Security Settings

Microsoft Excel 2007 has very tight security settings. Sometimes, when you open a saved spreadsheet with RTD links, the data is not being updated even though TeleTrader Professional RTD is running and visible in the system tray.

If this is the case, you can try to change the security settings in the **Excel Options** dialog. Click **Trust Center**, and then click the button **Trust Center Settings**. Change the settings under **External Content** to your needs. The macro security settings need to be set to "low" or "medium".

Available Field Names

For live RTD links, the following field names can be used. In this list you see the column names (used in TeleTrader Professional price pages) in alphabetic order, the field name that you must use for RTD links, and an optional description of the field.

Note For most financial information, you can retrieve figures for a specific year by adding the year in square brackets after the field name, for example `CompanyRatioNetEarningsPerShare[2010]`. Those fields are marked with the note **(years available)**.

TeleTrader Professional Column	RTD Field Name	Description
Quote Information		
Ask	`Ask`	Best Ask price
AskDateTime	`AskDateTime`	Date and time of the best Ask price
AskDateTimeNotNull	`AskDateTimeNotNull`	Date and time of the best Ask price (never null)
AskHigh	`AskHigh`	Highest Ask from last trading day or session
AskLow	`AskLow`	Lowest Ask from last trading day or session
AskNotNull	`AskNotNull`	Best Ask price (never null)
AskSize	`AskSize`	Size of the best Ask price
AskSizeNotNull	`AskSizeNotNull`	Size of the best Ask price (never null)
AskSup	`AskSup`	Supplement to the Ask price
AskSupNotNull	`AskSupNotNull`	Supplement to the Ask price (never null)
AskTotal	`AskTotal`	Accumulated Ask Size, available

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		only on Belgrade Stock Exchange
Auction_MOI	AuctionMOI	Auction Market Order Interruption Indicator
Auction_VI	AuctionVI	Auction Volatility Interruption Indicator
AvgPrice1M	Average Price 1M	Average price of the last month
AvgPrice1Y	Average Price 1Y	Average price of the last year (last 52 weeks)
AvgPriceMTD	Average Price MTD	Average price of the current month (month-to-date)
AvgPricePrevM	Average Price Previous Month	Average price of the previous month
AvgPricePrevQ	Average Price Previous Quarter	Average price of the previous quarter
AvgVolume1M	Average Volume 1M	Average volume of the last month
AvgVolume1Y	Average Volume 1Y	Average volume of the last year (last 52 weeks)
Bid	Bid	Best Bid price
BidDateTime	BidDateTime	Date and time of the best Bid price
BidDateTimeNotNull	BidDateTimeNotNull	Date and time of the best Bid price (never null)
BidHigh	BidHigh	Highest Bid from last trading day or session
BidLow	BidLow	Lowest Bid from last trading day or session
BidNotNull	BidNotNull	Best Bid price (never null)
BidSize	BidSize	Size of the best Bid price
BidSizeNotNull	BidSizeNotNull	Size of the best Bid price (never null)
BidSup	BidSup	Supplement to the Bid price
BidSupNotNull	BidSupNotNull	Supplement to the Bid price (never null)
BidTotal	BidTotal	Accumulated Bid Size, available only on Belgrade Stock Exchange
Change	Change	Change of the last trading day or session
Change%	PercChg	Percent change of the last trading day or session
ChgLast	ChgLast	Absolut change of the last price
ChgLast%	ChgLastPerc	Percent change of the last price
ChgSettle	ChangeSettle	Absolut change of the last price compared to last settlement value
ChgSettle%	ChgSettlePerc	Percent change of the last price compared to last settlement value
ChgTo	ChangeToday	Change of todays trading session only
ChgTo%	PercChgToday	Percent change of todays trading session only

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Contr	`Contributor`	Contributor of the last Bid, Ask and Last price (Forex only)
Date	`Date`	Date of the last price
DateTime	`DateTime`	Date and time of the last price
FirstClose	`First Close`	Close from the first day of trading
FirstDate	`First Trading Date`	Date of the first day of trading
High	`High`	Highest quote from last trading day or session
High1M	`High 1M`	Highest quote in the last month
High1W	`High 1W`	Highest quote in the last week
High1Y	`High 1Y`	Highest quote in the last year (last 52 weeks)
High3M	`High 3M`	Highest quote in the last three months
High3Y	`High 3Y`	Highest quote in the last three years
High5Y	`High 5Y`	Highest quote in the last five years
HighDate1Y	`High Date 1Y`	Date on which the highest quote in the last year (last 52 weeks) occured
HighDatePrevY	`High Date Previous Year`	Date on which the highest quote in the previous year (the year before the current calendar year) occured
HighDateYTD	`High Date YTD`	Date on which the highest quote in the current year (year-to-date) occured
HighPrevY	`High Previous Year`	Highest quote in the previous year (the year before the current calendar year)
HighYTD	`High YTD`	Highest quote in the current year (year-to-date)
Historical10Y	`Historical Close 10Y`	Close ten years before current date
Historical1M	`Historical Close 1M`	Close one month before current date
Historical1W	`Historical Close 1W`	Close one week before current date
Historical1Y	`Historical Close 1Y`	Close one year before current date
Historical2Y	`Historical Close 2Y`	Close two years before current date
Historical3M	`Historical Close 3M`	Close three months before current date
Historical3Y	`Historical Close 3Y`	Close three years before current date
Historical4Y	`Historical Close 4Y`	Close four years before current date
Historical5Y	`Historical Close 5Y`	Close five years before current date
Historical6M	`Historical Close 6M`	Close six months before current date

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HistoricalYTD	`Historical Close YTD`	Close from the first trading session of the current year (year-to-date)
IndPrice	`IndPrice`	Indicative price calculated by the exchange
Last	`Last`	Last price
LastSup	`LastSup`	Supplement to the Last price
Low	`Low`	Lowest quote from last trading day or session
Low1M	`Low 1M`	Lowest quote in the last month
Low1W	`Low 1W`	Lowest quote in the last week
Low1Y	`Low 1Y`	Lowest quote in the last year (last 52 weeks)
Low3M	`Low 3M`	Lowest quote in the last three months
Low3Y	`Low 3Y`	Lowest quote in the last three years
Low5Y	`Low 5Y`	Lowest quote in the last five years
LowDate1Y	`Low Date 1Y`	Date on which the lowest quote in the last year (last 52 weeks) occured
LowDatePrevY	`Low Date Previous Year`	Date on which the lowest quote in the previous year (the year before the current calendar year) occured
LowDateYTD	`Low Date YTD`	Date on which the lowest quote in the current year (year-to-date) occured
LowPrevY	`Low Previous Year`	Lowest quote in the previous year (the year before the current calendar year)
LowYTD	`Low YTD`	Lowest quote in the current year (year-to-date)
MPh	`MarketPhase`	Indicates the current Market Phase
NumT	`NumTicks`	Number of trades or ticks on that day
OI	`OI`	Number of outstanding contracts at the end of the day
OIDateTime	`OIDateTime`	Date and time of the Open Interest
Open	`Open`	Opening quote from last trading day or session
P2Ask	`P2Ask`	Ask value at the end of the day before the previous trading day or session
P2AskDateTime	`P2AskDateTime`	Date/Time of the Ask value at the end of the day before the previous trading day or session
P2Bid	`P2Bid`	Bid value at the end of the day before the previous trading day or session
P2BidDateTime	`P2BidDateTime`	Date/Time of the Bid value at the end of the day before the previous

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		trading day or session
P2Close	`P2Close`	Close from the day before the previous trading day or session
P2Date	`P2Date`	Date from the day before the previous trading day or session
P2High	`P2High`	High from the day before the previous trading day or session
P2Low	`P2Low`	Low from the day before the previous trading day or session
P2NumT	`P2NumTicks`	Number of trades in the day before the previous trading day or session
P2Open	`P2Open`	Open from the day before the previous trading day or session
P2Volume	`P2Volume`	Volume from the day before the previous trading day or session
PAsk	`PAsk`	Ask value at the end of the previous trading day or session
PAskDateTime	`PAskDateTime`	Date/Time of the Ask value at the end of the previous trading day or session
PBid	`PBid`	Bid value at the end of the previous trading day or session
PBidDateTime	`PBidDateTime`	Date/Time of the Bid value at the end of the previous trading day or session
PChg	`PChg`	Change from the previous trading day or session
PClose	`PClose`	Close from the previous trading day or session
PDate	`PDate`	Date of the previous trading day or session
Perf1W	`Perf1W`	Performance in the last week
Perf1M	`Perf1M`	Performance in the last month
Perf3M	`Perf3M`	Performance in the last three months
Perf6M	`Perf6M`	Performance in the last six months
PerfYTD	`PerfYTD`	Performance in the current year (year-to-date)
Perf1Y	`Perf1Y`	Performance in the last year
Perf2Y	`Perf2Y`	Performance in the last two years
Perf3Y	`Perf3Y`	Performance in the last three years
Perf4Y	`Perf4Y`	Performance in the last four years
Perf5Y	`Perf5Y`	Performance in the last five years
Perf10Y	`Perf10Y`	Performance in the last ten years
PerfStart	`PerfStart`	Performance since the first trading day
PHigh	`PHigh`	High from the previous trading day or session
PLow	`PLow`	Low from the previous trading day

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		or session
PNumT	`PNumTicks`	Number of trades in the previous trading day or session
POpen	`POpen`	Open from the previous trading day or session
PVolume	`PVolume`	Total volume from the previous trading day or session
Settle	`Settle`	Settlement price
SurplInd	`SurplInd`	Surplus Indicator
SurplQty	`SurplQty`	Surplus Quantity
TickTrend	`TickTrend`	Trend of the last 10 ticks, + means up, - means down, . means equal
Time	`Time`	Time of the last price
Turnover	`Turnover`	Total volume traded, each trade multiplied with its volume
Turnover10Y	`Turnover 10Y`	Turnover in the last ten years
Turnover1M	`Turnover 1M`	Turnover in the last month
Turnover1W	`Turnover 1W`	Turnover in the last week
Turnover1Y	`Turnover 1Y`	Turnover in the last year (last 52 weeks)
Turnover2Y	`Turnover 2Y`	Turnover in the last two years
Turnover3M	`Turnover 3M`	Turnover in the last three months
Turnover3Y	`Turnover 3Y`	Turnover in the last three years
Turnover4Y	`Turnover 4Y`	Turnover in the last four years
Turnover5Y	`Turnover 5Y`	Turnover in the last five years
Turnover6M	`Turnover 6M`	Turnover in the last six months
TurnoverEuro1M	`Turnover Euro 1M`	Turnover in the last month in Euro
TurnoverYTD	`Turnover YTD`	Turnover in the current year (year-to-date)
Vol	`Volume`	Total volume of the last trading day or session
Volatility1M	`Volatility 1M`	Volatility in the last month
Volatility1Y	`Volatility 1Y`	Volatility in the last year (last 52 weeks)
Volatility6M	`Volatility 6M`	Volatility in the last six months
VolLast	`VolLast`	Volume of the last price
Volume10Y	`Volume 10Y`	Total volume traded in the last ten years
Volume1M	`Volume 1M`	Total volume traded in the last month
Volume1W	`Volume 1W`	Total volume traded in the last week
Volume1Y	`Volume 1Y`	Total volume traded in the last year (last 52 weeks)
Volume2Y	`Volume 2Y`	Total volume traded in the last two years
Volume3M	`Volume 3M`	Total volume traded in the last

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		three months
Volume3Y	`Volume 3Y`	Total volume traded in the last three years
Volume4Y	`Volume 4Y`	Total volume traded in the last foru years
Volume5Y	`Volume 5Y`	Total volume traded in the last five years
Volume6M	`Volume 6M`	Total volume traded in the last six months
VolumeYTD	`Volume YTD`	Total volume traded in the current year (year-to-date)
VWAP	`VWAP`	Volume Weighted Average Price
VWAP_Chg	`VWAPChg`	VWAP Change to Prev VWAP
VWAP_Chg%	`VWAPChgPerc`	VWAP Change % to Prev VWAP
VWAP_DatePrev	`VWAPDatePrev`	VWAP DateTime from Previous Trading Day
VWAP_DatePrev2	`VWAPDatePrev2`	VWAP DateTime from day before
VWAP_DateTime	`VWAPTime`	VWAP DateTime
VWAP_NetChg	`VWAPNetChg`	VWAP NetChange to Prev VWAP
VWAP_NetChg%	`VWAPNetChgPerc`	VWAP NetChange % to Prev VWAP
VWAP_NEtChgPrev	`VWAPNetChgPrev`	VWAP Prev NetChange to Day Before VWAP
VWAP_NetChgPrev%	`VWAPNetChgPrevPerc`	VWAP Prev NetChange % to Day Before VWAP
VWAP_NetChgTO	`VWAPNetChgTO`	VWAP NetChange Today to Prev VWAP
VWAP_NetChgTO%	`VWAPNetChgTOPerc`	VWAP NetChange % Today to Prev VWAP
VWAP_NetChgTS	`VWAPNetChgTS`	VWAP NetChange TradingSession to Prev VWAP
VWAP_NetChgTS%	`VWAPNetChgTSPerc`	VWAP NetChange % TradingSession to Prev VWAP
VWAP_PREV	`VWAPPrev`	VWAP from Previous Trading Day
VWAP_Prev2	`VWAPPrev2`	VWAP from Day Before

Symbol information

ContractMonths	`ContractMonths`	Contract months of a futures contract.
ContrSz	`ContrSz`	Contract size for options and futures contracts
CQuantity	`CQuantity`	Contract size quantity of a futures contract
CuID	`Curr`	The ID of the currency for the symbol
CUnit	`CUnit`	Contract size unit of a futures contract (for example "bushels" for corn futures)

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Curr	`CurrISO`	The ISO code of the currency for the symbol
DailyPriceLimit	`DailyPriceLimit`	Maximum amount a futures contract is allowed to rise or fall on a single trading day.
ExchName	`ExchName`	Exchange Name
ExpDate	`ExpDate`	Expiration data of futures and options contracts. The time shown is not the time where trading ends!
ExpMonth	`ExpMonth`	Month where the contract expires
ExpYear	`ExpYear`	Year where the contract expires
FXUnit	`FXUnit`	Exchange rate unit
FilteredPutCallRatio	`FilteredPutCallRatio`	Filtered PUT/CALL ratio.
ISIN	`ISIN`	International security identification number
LocalID	`LocalID`	Identification code used locally on the exchange
LocalIDType	`LocalIDType`	Type of the identification code used locally on the exchange
LongName	`LongName`	Descriptive name of futures and options contracts
MinTickSize	`MinTickSize`	Minimum price increment of a futures contract
Name	`Name`	Full name of the symbol
OptVersion	`OptVersion`	Version number of options contract
PointValue	`PointValue`	Point value of a futures contract.
PutCallRatio	`PutCallRatio`	Put Call Ratio for Options
QuoteDenominator	`QuoteDenominator`	Denominator for the price quote of a futures contract (for example 100 if quoted in cents per bushel)
Remark	`Remark`	Optional remark for the description of a futures contract.
SettlementType	`SettlementType`	Type of settlement of a futures contract.
Strike	`Strike`	Strike price
Ticker	`Ticker`	Ticker name given by the exchange
TickValue	`TickValue`	Tick value of a futures contract.
TradingHours	`TradingHours`	Trading hours of a futures contract.
Type	`Type`	Type of the symbol
UndCategory	`UndCategory`	Category of the underlying asset or instrument of a futures contract.
UndSegment	`UndSegment`	Segment of the underlying asset or instrument of a futures contract.
UndSubCategory	`UndSubCategory`	Subcategory of the underlying asset or instrument of a futures contract.
WKN	`WKN`	German or Austrian symbol

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		number

Extra information

Buy	`Buy`	New buy order - No data available in RTD
Delay	`Delay`	Delay of the symbol
Kursblatt	`Kursblatt`	The so called "Kursblatt Number"
MarketSeg	`MarketSeg`	Market Segment the Symbol is traded in
Sell	`Sell`	New sell order - No data available in RTD
StatDB	`StatDB`	Database status of the Symbol
StorageServer	`StoringServer`	Storage Server Name
Text	`Text`	Text column - No data available in RTD
TID	`TID`	Unique numeric ID for a symbol
TradeSeg	`TradeSeg`	Trading Segment the Symbol is traded in
TRUN	`TRUN`	Unique root symbol ID for a symbol
TUN	`TUN`	Unique symbol ID for a symbol

Company Information

Annuals web address	`Annuals_www`	Direct link to annuals reports section on the companies website
BB from	`BbDateFrom`	Bookbuilding starting date
BB Price from	`BbPriceFrom`	Bookbuilding lower price limit
BB Price to	`BbPriceTo`	Bookbuilding upper price limit
BB to	`BbDateTo`	Bookbuilding end date
Bearer	`IsBearer`	"yes" if the security is a bearer share, "no" if it is a name share
Board	`Board`	Board
BV	`R_BookValuePerShare`	Book value per share
BV	`CompanyRatioBookValuePerShare[2014]`	Book value per share (years available)
Calc. Date	`CompanyRatioCalculation Date`	Date where the calculated Ratios were last updated
Calc. Date	`CompanyRatioCalculation Date[2014]`	Date where the Ratios were calculated (years available)
Calendar web address	`Calendar_www`	Direct link to company calendar part on the companies website
CEO	`CEO`	CEO
CF I	`R_CFPerShareI`	Cash flow per share I
CF I	`CompanyRatioCFPerShareI[2014]`	Cash flow per share I (years available)
CF II	`R_CFPerShareII`	Cash flow per share II
CF II	`CompanyRatioCFPerShareII[2014]`	Cash flow per share II (years

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		available)
City	`City`	City
Company web address	`CompanyPart_www`	Direct link to company information on the companies website
Country	`CountryID`	Country of residence
Dividend yield	`R_DividendYield`	Dividend yield
Dividend yield	`CompanyRatioDividendYield[2014]`	Dividend yield (years available)
Earnings yield I	`R_EarningsYieldI`	Earnings yield I
Earnings yield I	`CompanyRatioEarningsYieldI[2014]`	Earnings yield I (years available)
Earnings yield II	`R_EarningsYieldII`	Earnings yield II
Earnings yield II	`CompanyRatioEarningsYieldII[2014]`	Earnings yield II (years available)
Earnings yield III	`R_EarningsYieldIII`	Earnings yield III
Earnings yield III	`CompanyRatioEarningsYieldIII[2014]`	Earnings yield III (years available)
Email	`Email`	E-mail address
Face value	`FaceValue`	Face value
Face Value Currency	`FaceValueCurrencyId`	Currency of the stocks Face value
Fax	`Fax`	Fax number
First day Close	`FDayClose`	Closing price of the first trading day
First day Open	`FDayOpen`	Opening price of the first trading day
Fiscal year end	`FiscalYearEnd`	Fiscal year end
Free Float	`FreeFloat`	Percentage of freely floated shares that are traded and held by the public.
Free Float Market Cap	`R_FreeFloatMarketCap`	Free Float market capitalization
Greenshoe	`Greenshoe`	Number of shares offered as Greenshoe
Has Face Value	`HasFaceValue`	Security with face value
Industry	`CompanyIndustry`	Industry
IPO date	`IPODate`	IPO date
IR Contact	`IRelationsName`	Name of Investor Relations contact person
IR Email	`IRelationsEmail`	Fax number of Investor Relations contact person
IR Fax	`IRelationsFax`	E-mail of Investor Relations contact person
IR Phone	`IRelationsPhone`	Telephone number of Investor Relations contact person
IR web address	`IR_www`	Direct link to Investor Relations area on the companies website
IR2 Contact	`IR2Name`	Name of the second Investor Relations contact person
IR2 Fax	`IR2Fax`	Fax number of the second Investor Relations contact person
IR2 Telefon	`IR2Telefon`	Telephone number of the second Investor Relations contact person

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Issue price	`IssuePrice`	Final issue price of IPO
Issue Type	`IssueTypeID`	Issue type name
Lead manager	`LeadManager`	Lead manager of the IPO
Liquid Assets	`R_LiquidAssetsPerShare`	Liquid assets per share
Liquid Assets	`CompanyRatioLiquidAssetsPerShare[2014]`	Liquid assets per share (years available)
Market capitalization	`R_MarketCap`	Market capitalization
Market capitalization	`CompanyRatioMarketCap[2014]`	Market capitalization (years available)
MC/EBITDA	`R_MarketCapEBITDA`	Market capitalization / EBITDA
MC/EBITDA	`CompanyRatioMarketCapEBITDA[2014]`	Market capitalization / EBITDA (years available)
MCPE	`R_MarketCapPerEmployee`	Marketet capitalization per employee
MCPE	`CompanyRatioMarketCapPerEmployee[2014]`	Marketet capitalization per employee (years available)
Net Assets	`R_NetAssetsPerShare`	Net assets per share
Net Assets	`CompanyRatioNetAssetsPerShare[2014]`	Net assets per share (years available)
Net EPS	`R_NetEarningsPerShare`	Net earnings per share (EPS), calculated
Net EPS	`CompanyRatioNetEarningsPerShare[2014]`	Net earnings per share (EPS), calculated (years available)
Net EPS 2	`R_NetEarningsWithoutExtraPerShare`	Net earnings without extraordinary income or loss per share
Net EPS 2	`CompanyRatioNetEarningsWithoutExtraPerShare[2014]`	Net earnings without extraordinary income or loss per share (years available)
PBVR	`R_PriceBookValue`	Price book value ratio
PBVR	`CompanyRatioPriceBookValue[2014]`	Price book value ratio (years available)
PCFR I	`R_PriceCFI`	Price-to-cash flow ratio I
PCFR I	`CompanyRatioPriceCFI[2014]`	Price-to-cash flow ratio I (years available)
PCFR II	`R_PriceCFII`	Price-to-cash flow ratio II
PCFR II	`CompanyRatioPriceCFII[2014]`	Price-to-cash flow ratio II (years available)
PE I	`R_PriceEarnings`	Price earnings ratio I with EPS Basic
PE I	`CompanyRatioPriceEarnings[2014]`	Price earnings ratio I with calculated EPS (years available)
PE II	`R_PriceEPSBasic`	Price earnings ratio II with calculated EPS
PE II	`CompanyRatioPriceEPSBasic[2014]`	Price earnings ratio II with EPS Basic (years available)
PE III	`R_PriceEarningsWithoutExtra`	Price earnings ratio III without extraordinary income or loss
PE III	`CompanyRatioPriceEarningsWithoutExtra[2014]`	Price earnings ratio III without extraordinary income or loss (years

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		available)
PEG I	R_PEGI	PEG (Price-earnings-to-growth) I
PEG I	CompanyRatioPEGI[2014]	PEG (Price-earnings-to-growth) I (years available)
PEG II	R_PEGII	PEG (Price-earnings-to-growth) II
PEG II	CompanyRatioPEGII[2014]	PEG (Price-earnings-to-growth) II (years available)
PEG III	R_PEGIII	PEG (Price-earnings-to-growth) III
PEG III	CompanyRatioPEGIII[2014]	PEG (Price-earnings-to-growth) III (years available)
Phone	Phone	Telephone number
Profile	BusinessDescrEng	Business description
PRR	R_PriceRevenues	Price-to-revenues ratio
PRR	CompanyRatioPriceRevenues[2014]	Price-to-revenues ratio (years available)
Revenues	R_RevenuesPerShare[2014]	Revenues per share (years available)
Revenues	CompanyRatioRevenuesPerShare[2014]	Revenues per share (years available)
Sector	SectorID	Sector
Shares offered	SharesOffered	Number of shares offered during IPO
Stockholders Structure	Stockholders Structure	Stockholders Structure
Street	Street	Street address
Sub sector	SubSectorID	Sub sector
Supervisory board	SupervisoryBoard	Supervisory board
Underwriter group	UnderwriterGroup	Group of underwriters
WWW	WWW	Internet address

Financial Figures

Accounting standard	AccountingStandardID[2014]	Accounting standard (years available)
Accounts payable	BS_L_Ind_AccountPayble[2014]	Accounts payable (years available)
Accounts receivable	BS_A_ReceivablesLoansTotal[2014]	Accounts receivable (years available)
Administrative expenses	IS_AdministrativeExpenses[2014]	Administrative expenses (years available)
Affiliated party receivables	BS_A_Ind_ReceivablesRelatedPart[2014]ies	Affiliated party receivables (years available)
Allowances	BS_A_Allowances[2014]	Allowance for credit losses (years available)
Amortisation	IS_Ammortisation[2014]	Amortisation (years available)
Associated party receivables	BS_A_Ind_ReceivablesShareholders[2014]	Associated party receivables (years available)
Benefits	IS_Ins_Benefits[2014]	Benefits (years available)
Book value	R_BookValue[2014]	Book value (years available)

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Book value per share growth rate	`R_BookValuePerShareGrowth[2014]`	Book value per share growth rate (years available)
Capital expenditures	`CFCapitalExpenditures[2014]`	Capital expenditure and financial investment (years available)
Capital resereves	`BS_L_CapitalPaidIn[2014]`	Capital resereves (years available)
Cash	`BS_A_Cash[2014]`	Cash and cash equivalents (years available)
Cash at the end of the year	`CFCashAtYearEnd[2014]`	Cash at the end of the year (years available)
Cash Flow	`CFCashFlow[2014]`	Cash Flow (years available)
Cash flow growth rate	`R_CFGrowth[2014]`	Cash flow growth rate (years available)
Cash flow marge I	`R_CFMargeI[2014]`	Cash flow marge I (years available)
Cash flow marge II	`R_CFMargeII[2014]`	Cash flow marge II (years available)
Cash flow ROA I	`R_CFROAI[2014]`	Cash flow ROA I (years available)
Cash flow ROA II	`R_CFROAII[2014]`	Cash flow ROA II (years available)
Cash flow ROE I	`R_CFROEI[2014]`	Cash flow ROE I (years available)
Cash flow ROE II	`R_CFROEII[2014]`	Cash flow ROE II (years available)
Cash Flow, total	`CFCashFlowTotal[2014]`	Decrease/increase in cash in the year (years available)
CF from financing	`CFFinancing[2014]`	Cash flow from financing (years available)
CF from investing	`CFInvesting[2014]`	Cash flow from investing activities (years available)
CF from operations	`CFOperations[2014]`	Cash flow from operating activities (years available)
Claims expenses, net	`IS_Ins_ClaimsExpensesNet[2014]`	Total expences for claims (net), Benefits payble to policyoldrs, net (years available)
Commisions expenses	`IS_Ins_CommisionsExpenses[2014]`	Commisions expenses (years available)
Commission fee, expenses	`IS_Bank_CommissionFeeExpenses[2014]`	Fees and commission payable (years available)
Commission fee, income	`IS_Bank_CommissionFeeIncome[2014]`	Fees and commission receivable (years available)
Common stock	`BS_L_CommonStock[2014]`	Common stock (years available)
Core Capital	`BS_L_Bank_CoreCapital[2014]`	Core Capital (years available)
Cost of goods sold	`IS_Ind_CostOfGoodsSold[2014]`	Cost of goods sold (years available)
Costs of materials	`IS_Ind_CostsOfMaterials[2014]`	Other administrative expences (Material costs) (years available)
Costs of materials rate	`R_CostsOfMaterialsRate[2014]`	Costs of materials rate (years available)
Currency BS	`CurrencyBS[2014]`	Balance sheet currency (years available)
Current assets	`BS_A_Ind_CurrAssetsTotal[2014]`	Current assets (years available)
Debt capital	`R_DebtCapital[2014]`	Debt capital (years available)

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Debt equity ratio	`R_DebtEquityRatio[2014]`	Debt equity ratio (years available)
Debt ratio	`R_DebtRatio[2014]`	Debt ratio (years available)
Debt securities	`BS_A_Bank_FixedIncomeInstruments[2014]`	Debt securities (years available)
Debt securities	`BS_L_Bank_DebtSecurities[2014]`	Debt evidenced by certificates (years available)
Debt, total	`BS_L_DebtTotal[2014]`	Debt (Borrowings), total (years available)
Deferred current income taxes	`BS_A_Ind_DeferredIncomeTaxesCurrent[2014]`	Deferred current income taxes (years available)
Deferred current income taxes	`BS_L_Ind_DeferredIncomeTaxesCurrent[2014]`	Deferred current income taxes (years available)
Deferred income	`BS_A_DeferredIncome[2014]`	Prepayments and accrued income (years available)
Deffered tax assets	`BS_A_DeferredIncomeTaxes[2014]`	Deffered tax assets (years available)
Deffered tax liabilities	`BS_L_DeferredIncomeTaxes[2014]`	Deffered tax liabilities (years available)
Depreciation	`BS_A_Depreciation[2014]`	Depreciation (years available)
Depreciation	`IS_Depreciation[2014]`	Depreciation (years available)
Depreciation & Amortisation	`IS_DepreciationAndAmortisation[2014]`	Depreciation and Amortisation, total (years available)
Depreciation & Amortization	`CFDepreciationAmortization[2014]`	Depreciation & Amortization (years available)
Depreciation on financial assets	`IS_DepreciationOnFinancialAssets[2014]`	Depreciation on financial assets (years available)
Depreciation rate	`R_DepreciationRate[2014]`	Depreciation rate (years available)
Differed income	`BS_L_DifferedIncome_Recnungsabgr[2014]`	Differed income (years available)
Dividend	`BS_L_Bank_Dividend[2014]`	Dividend (years available)
Dividend growth rate	`R_DividendGrowth[2014]`	Dividend growth rate (years available)
Dividends paid	`CFCashDividendsPaid[2014]`	Dividends paid (years available)
Dividends PS	`DividendsPS[2014]`	Dividends per share (years available)
Dynamic debt equity ratio I	`R_DynamicDebtEquityRatioI[2014]`	Dynamic debt equity ratio I (years available)
Dynamic debt equity ratio II	`R_DynamicDebtEquityRatioII[2014]`	Dynamic debt equity ratio II (years available)
EBIT growth rate	`R_EBITGrowth[2014]`	EBIT growth rate (years available)
EBITDA	`IS_Ind_EBITDA[2014]`	EBITDA (years available)
EBITDA-margin	`R_EBITDAMargin[2014]`	EBITDA-margin (years available)
EBIT-margin	`R_EBITMargin[2014]`	EBIT-margin (years available)
EGT	`IS_OperatingIncomeBeforeTaxes_EGT[2014]`	Operating income before taxes (years available)
Employees	`Employees[2014]`	Employees (years available)
Employees growth rate	`R_EmployeesGrowth[2014]`	Employees growth rate (years available)

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EPS Basic	`EPSBasic[2014]`	EPS Basic (years available)
EPS Basic, 3 Year annualized growth	`R_EPSBasic3YearAnnualizedGrowth[2014]`	EPS Basic, 3 Year annualized growth (years available)
EPS Diluted	`EPSDiluted[2014]`	EPS Diluted (years available)
Equities	`BS_A_Bank_Equities[2014]`	Shares and other variable-yield instruments (years available)
Equity ratio	`R_EquityRatio[2014]`	Equity ratio (years available)
Equity to fixed assets ratio	`R_EquityToFixedAssetsRatio[2014]`	Equity to fixed assets ratio (years available)
Equity turnover	`R_EquityTurnover[2014]`	Equity turnover (years available)
Extraordinary result	`IS_ExtraordinaryIncomeLoss[2014]`	Extraordinary result (years available)
Financial assets (incurances)	`BS_A_Bank_FinancialAssetsIncurances[2014]`	Financial assets (incurances) (years available)
Fixed assets	`BS_A_NonCurrentAssetsTotal[2014]`	Fixed assets (years available)
Fixed assets turnover	`R_FixedAssetsTurnover[2014]`	Fixed assets turnover (years available)
Fixed to current assets ratio	`R_FixedToCurrentAssetsRatio[2014]`	Fixed to current assets ratio (years available)
General expenses	`IS_GeneralExpenses[2014]`	General expenses (years available)
Gross profit	`IS_Ind_GrossProfit[2014]`	Gross profit (years available)
Gross profit growth rate	`R_GrossProfitGrowth[2014]`	Gross profit growth rate (years available)
Gross profit margin	`R_GrossProfitMargin[2014]`	Gross profit margin (years available)
Group balance profit	`IS_GroupBalanceProfit[2014]`	Group balance profit (years available)
Income after taxes	`IS_IncomeAfterTaxes[2014]`	Profit after tax (years available)
Income before extraordinary item	`IS_IncomeBeforeExtraordinaryItem[2014]`	Income before extraordinary item (years available)
Income before taxes	`IS_IncomeBeforeTaxes[2014]`	Income before income taxes (years available)
Income taxes	`IS_IncomeTaxes[2014]`	Income taxes (years available)
Income, continuing operations	`IS_Ind_IncomeContinuingOperations[2014]`	Income from continuing operations (years available)
Income, discontinued business	`IS_Ind_IncomeDiscontinuedBusiness[2014]`	Income from discontinued business (years available)
Insurance income, net	`IS_Ins_InsuranceIncomeNet[2014]`	Net Income from the insurance business (years available)
Insurance reserves	`BS_L_Ins_InsuranceReserves[2014]`	Insurance reserves (provisions) (years available)
Intangible assets	`BS_A_IntangiblesNet[2014]`	Intangible assets (years available)
Intensity of capital expenditure	`R_IntensityOfCapitalExpenditure[2014]`	Intensity of capital expenditure (years available)
Intensity of capital investments	`R_IntensityOfCapitalInvestments[2014]`	Intensity of capital investments (years available)
Intensity of current	`R_IntensityOfCurrentAssets[2014]`	Intensity of current assets (years

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assets		available)
Intensity of liquid assets	`R_IntensityOfLiquidAssets[2014]`	Intensity of liquid assets (years available)
Intensity of onvestments	`R_IntensityOfInvestments[2014]`	Intensity of onvestments (years available)
Intensity of PPE-investments	`R_IntensityOfPPEInvestments[2014]`	Intensity of PPE-investments (years available)
Interest	`BS_A_Bank_Interest[2014]`	Interest receivable (years available)
Interest	`BS_L_Bank_Interest[2014]`	Accrued interest payable (years available)
Interest bearing deposits	`BS_A_Bank_InterestBearingDep[2014]`	Deposits at interest with banks (years available)
Interest expences	`IS_InterestExpenses[2014]`	Interest expences (years available)
Interest income	`IS_InterestIncome[2014]`	Interest income (years available)
Interest-bearing deposits	`BS_L_Bank_InterestBearingDeposits[2014]`	Interest-bearing deposits (years available)
Interst expence rate	`R_InterstExpenceRate[2014]`	Interst expence rate (years available)
Inventories	`BS_A_Ind_Inventories[2014]`	Inventories (years available)
Inventory turnover	`R_InventoryTurnover[2014]`	Inventory turnover (years available)
Investment income, insurance	`IS_Ins_InvestmentIncomeInsurance[2014]`	Investment income from insurance (years available)
Investments	`BS_A_Investments[2014]`	Investments (years available)
Investments for the risk of policyholders	`BS_A_Ins_InvestmentsForRiskOfPolicyholders[2014]`	Investments for the risk of policyholders (years available)
Investments in affiliates	`BS_A_InvestmentsInAffiliates[2014]`	Investments in affiliates and related enterprises (years available)
Investments in Joint Ventures (UK)	`BS_A_UK_InvestmentsJointVentures[2014]`	Investments in Joint Ventures (UK) (years available)
Investments, equities	`BS_A_Bank_InvestmentsEquities[2014]`	Shares and other variable yield securities (years available)
Investments, fixed income	`BS_A_Bank_InvestmentsFixedIncome[2014]`	Securities held to maturity (Bonds and other fixed-income securities) (years available)
Is Bank	`IsBank`	YES - financial company, bank; NO - industrial company
Liabilities & Equity, total	`BS_L_LiabilitiesEquityTotal[2014]`	Total liabilities and shareholders funds (years available)
Liabilities to banks	`BS_L_LiabilitiesBanks[2014]`	Liabilities to banks (years available)
Liabilities to customes	`BS_L_Bank_LiabilitiesCustomers[2014]`	Liabilities to customes (years available)
Liquidity I	`R_LiquidityI[2014]`	Liquidity I (years available)
LiquidityII / QuickRatio	`R_LiquidityII_QuickRatio[2014]`	LiquidityII / QuickRatio (years available)
LiquidityIII / CurrentRatio	`R_LiquidityIII_CurrentRatio[2014]`	LiquidityIII / CurrentRatio (years available)
Loans to banks	`BS_A_Bank_LoansToBanks[2014]`	Loans and advances to banks

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		(years available)
Loans to customers	`BS_A_Bank_LoansToCustomers[2014]`	Loans and advances to customers (years available)
Long-term debt	`BS_L_LongTermDebt[2014]`	Long-term debt (years available)
Market capitalization, total	`R_MarketCapTotal[2014]`	Market capitalization, total (years available)
Marketable securities	`BS_A_SecuritiesCurrent[2014]`	Marketable securities (years available)
Minority interests	`BS_L_MinorityInterests[2014]`	Minority interests (years available)
Minority interests	`IS_MinorityInterests[2014]`	Minority interests (years available)
Mortgages	`BS_A_Bank_Mortgages[2014]`	Mortgages (years available)
Net assets (UK)	`BS_A_UK_NetAssets[2014]`	Net assets (UK) (years available)
Net current liabilities (UK)	`BS_A_Ind_UK_NetCurrentLiabilities[2014]`	Net current liabilities (UK) (years available)
Net EPS (calculated)- growth rate II	`R_NetEarningsPerShareGrowth[2014]`	Net earnings per share (EPS) (calculated)- growth rate II (years available)
Net EPS 3 Year annualized growth	`R_NetEarningsPerShare3YearAnnualizedGrowth[2014]`	Net EPS 3 Year annualized growth (years available)
Net EPS- growth rate I	`R_EPSBasicGrowth[2014]`	Net earnings per share (EPS)- growth rate I (years available)
Net EPS without extra income - growth rate III	`R_NetEarningsWithoutExtraPerShareGrowth[2014]`	Net earnings without extraordinary income or loss per share - growth rate III (years available)
Net EPS without extra, 3 Year annualized growth	`R_NetEarningsWithoutExtra3YearAnnualizedGrowth[2014]`	Net EPS without extra 3 Year annualized growth (years available)
Net fees and commission income	`IS_Bank_CommissionFeeIncomeNet[2014]`	Net fees and commission income (years available)
Net financial income	`IS_FinancialIncomeNet[2014]`	Net financial income (years available)
Net income	`BS_L_NetIncome[2014]`	Net income for the year (years available)
Net income	`IS_NetIncome[2014]`	Net Income / Profit for the financial year (years available)
Net income growth rate	`R_NetIncomeGrowth[2014]`	Net income growth rate (years available)
Net income in percent of personal expenses	`R_NetIncomeInPercentOfPersonalExpenses[2014]`	Net income in percent of personal expenses (years available)
Net income per employee	`R_NetIncomePerEmloyee[2014]`	Net income per employee (years available)
Net interest income	`IS_InterestIncomeNet[2014]`	Net interest income (years available)
Net margin	`R_NetMargin[2014]`	Net margin (years available)
Non-current liabilities	`BS_L_Ind_NonCurrentLiabilitiesTotal[2014]`	Non-current liabilities (years available)
Non-interest-bearing deposits	`BS_L_Bank_NonInterestBearingDeposits[2014]`	Non-interest-bearing deposits (years available)
Operating income after taxes	`IS_OperatingIncomeAfterTaxes[2014]`	Profit on ordinary activities after tax (years available)

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Operating profit (EBIT)	`IS_OperatingIncome_EBIT[2014]`	Operating profit (EBIT) (years available)
Other assets	`BS_A_OtherAssets[2014]`	Other assets (years available)
Other comprehensive income (loss)	`BS_L_OtherComprehensiveIncome[2014]`	Other comprehensive income (loss) (years available)
Other current assets	`BS_A_Ind_OtherCurrentAssets[2014]`	Other receivables and other current assets (years available)
Other current liabilties	`BS_L_Ind_OtherCurrentLiabilities[2014]`	Other current liabilties (years available)
Other expenses, total	`IS_US_OtherExpensesTotal[2014]`	Other expenses, total (years available)
Other liabilities	`BS_L_OtherLiabilities[2014]`	Other liabilities (years available)
Other non-current assets	`BS_A_OtherNonCurrentAssets[2014]`	Other non-current assets (years available)
Other non-current liabilties	`BS_L_Ind_OtherNonCurrentLiabilities[2014]`	Other non-current liabilties (years available)
Other operating expenses	`IS_OtherOperatingExpenses[2014]`	Other operating expenses (years available)
Other operating income	`IS_OtherOperatingIncome[2014]`	Other operating income (years available)
Other operating result	`IS_OtherOperatingResult[2014]`	Other operating result (years available)
Own stocks	`BS_A_OwnStocks[2014]`	Own stocks (years available)
Own stocks	`BS_L_Bank_OwnStocks[2014]`	Own stocks (years available)
Participations result	`IS_ParticipationsResult[2014]`	Result from investments in subsidiaries, associates and other investments (years available)
Payble insurance	`BS_L_Ins_PaybleInsurance[2014]`	Insurance policy claimes and reserves (years available)
Period from	`PeriodFrom[2014]`	The beginning of the fiscal year period (years available)
Period to	`PeriodTo[2014]`	The end of the fiscal year (years available)
Personal expenses per employee	`R_PersonalExpensesPerEmployee[2014]`	Personal expenses per employee (years available)
Personal expenses rate	`R_PersonalExpensesRate[2014]`	Personal expenses rate (years available)
Personnel expences	`IS_PersonalExpences[2014]`	Personnel expences (years available)
PPE	`BS_A_PropertyEquipment[2014]`	Property, plant and equipment (years available)
PPE, net	`BS_A_PropertyEquipmentNet[2014]`	Property, plant and equipment, net (years available)
Preferred stock	`BS_L_PreferredStock[2014]`	Preferred stock (years available)
Premium icome, net	`IS_Ins_PremiumIncomeNet[2014]`	Net earned premiums (years available)
Pre-tax margin	`R_PreTaxMargin[2014]`	Pre-Tax margin (years available)
Pre-tax ROA	`R_PretaxROA[2014]`	Pre-tax ROA (years available)
Pre-tax ROE	`R_PretaxROE[2014]`	Pre-tax ROE (Return On Equity)

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		(years available)
Provision for credit loss	`IS_Bank_ProvisionCreditLoss[2014]`	Provisions for bad and doubtful debts (years available)
Provisions	`BS_L_Provisions[2014]`	Provisions for liabilities and charges (years available)
Provisions for pension	`BS_L_ProvisionsForPension[2014]`	Provisions for pensions and similar long term (years available)
Provisions ratio	`R_ProvisionsRatio[2014]`	Provisions ratio (years available)
R&D costs rate	`R_RAndDCostsRate[2014]`	R&D costs rate (years available)
R&D expenses	`IS_Ind_RAndDExpenses[2014]`	Research and development expenses (years available)
R_ROA	`R_ROA[2014]`	ROA (Return On Assets) (years available)
R_ROE	`R_ROE[2014]`	ROE (Return On Equity) (years available)
Real estate	`BS_A_INS_RealEstate[2014]`	Real estate (years available)
Receivables from Insurance	`BS_A_Ins_ReceivablesFromInsurance[2014]`	Receivables from Insurance (years available)
Receivables from Reinsurance	`BS_A_Ins_ReceivablesFromReinsurance[2014]`	Receivables from Reinsurance (years available)
Reinsurance share of Technical Provisions	`BS_A_Ins_ReinsuranceShareOfTechnicalProvisions[2014]`	Reinsurance share of Technical Provisions (years available)
Related party payables	`BS_L_Ind_LiabilitiesRelatedParties[2014]`	Related party payables (years available)
Result of technical account in Life Insurance	`IS_Ins_ResultTechnicalAccountLifeInsurance[2014]`	Result of technical account in Life Insurance (years available)
Result of technical account in Non-Life Insurance	`IS_Ins_ResultTechnicalAccountNonLifeInsurance[2014]`	Result of technical account in Non-Life Insurance (years available)
Retained earnings	`IS_Retained[2014]`	Retained earnings (years available)
Retained eranings	`BS_L_RetainedEarnings[2014]`	Retained eranings (years available)
Revenues	`IS_RevenuesTotal`	Revenues
Revenues growth rate	`R_RevenuesGrowth[2014]`	Revenues growth rate (years available)
Revenues per employee	`R_RevenuesPerEmloyee[2014]`	Revenues per employee (years available)
Revenues total 3 Year annualized growth	`R_RevenuesTotal3YearAnnualizedGrowth[2014]`	Revenues total 3 Year annualized growth (years available)
Sales	`IS_Ind_Sales[2014]`	Sales / Turnover (years available)
Sales & Marketing costs	`IS_SalesMarketingCosts[2014]`	Sales and marketing costs, Distribution costs (years available)
Securities available for sale	`BS_A_SecurritiesAvailableForSale[2014]`	Securities available for sale (years available)
Share premium account	`BS_L_UK_SharePremiumAccount[2014]`	Share premium account (years available)
Shares outstanding (particular ISIN)	`SharesOutstandingHistory[2014]`	Number of shares outstanding for particular ISIN (years available)

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Shares outstanding (total)	`SharesOutstandingHistory[2014]`	Shares outstanding (total) history (years available)
Shares outstanding date	`SharesOutstandingDate[2014]`	Shares outstanding date (years available)
Shares outstanding diluted (particular ISIN)	`SharesOutstandingDelHistory[2014]`	Number of shares outstanding (diluted) for particular ISIN (years available)
Shares outstanding diluted (total)	`SharesOutstandingDelHistory[2014]`	Shares outstanding diluted history (years available)
Short term debt	`BS_L_ShortTermDebt[2014]`	Short-term debt and current maturities (Creditors: amounts falling due within one year) (years available)
Subordinated liabilities	`BS_L_Bank_SubordinateLiabilities[2014]`	Subordinated liabilities (years available)
Subscribed capital	`BS_L_CapitalSubscribed[2014]`	Subscribed capital (years available)
Tax expence rate	`R_TaxExpenceRate[2014]`	Tax expence rate (years available)
Total assets	`BS_A_AssetsTotal[2014]`	Total assets (years available)
Total assets less current liabilities (UK)	`BS_A_Ind_UK_TotalAssetsLessCurrentLiabilities[2014]`	Total assets less current liabilities (UK) (years available)
Total assets per emloyee	`R_TotalAssetsPerEmloyee[2014]`	Total assets per emloyee (years available)
Total capital employed	`BS_L_UK_TotalCapitalEmployed[2014]`	Total capital employed (years available)
Total capital turnover	`R_TotalCapitalTurnover[2014]`	Total capital turnover (years available)
Total current liabilities	`BS_L_Ind_CurrentLiabilitiesTotal[2014]`	Total current liabilities (years available)
Total deposits	`BS_L_Bank_DepositsTotal[2014]`	Total deposits (years available)
Total liabilities	`BS_L_LiabilitiesTotal[2014]`	Total liabilities (years available)
Total non interest expenses	`IS_Bank_US_NonInterestExpense[2014]`	Total non interest expenses (years available)
Total non interest income	`IS_Bank_US_NonInterestIncome[2014]`	Total non interest income (years available)
Total shareholders equity	`BS_L_StockholdersEquityTotal[2014]`	Total shareholders equity (years available)
Trade accounts receivable	`BS_A_Ind_ReceivablesFromThirdParties[2014]`	Trade accounts receivable (years available)
Trading assets	`BS_A_Bank_TradingAssets[2014]`	Trading assets (years available)
Trading income, net	`IS_Bank_TradingIncomeNet[2014]`	Earnings from financial transactions, net (years available)
Trading liabilities	`BS_L_Bank_Trading_Liabilities[2014]`	Trading liabilities (years available)
Treasury Bills	`BS_A_Bank_TreasuryBills[2014]`	Debt instruments (public) + refinancing with central bank (years available)
Units BS	`UnitsBS[2014]`	Balance sheet units (years available)

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Certificates

AutoExercise	AutoExercise	Specifies whether the option right is automatically exercised in the case of expiration (j=yes or n=no)
BonusLevel	BonusLevel	A bonus amount which is paid off, if security level is not touched
BonusYieldPaPerc	BonusYieldPaPerc	Bonus yield in percent per year
BonusYieldPerc	BonusYieldPerc	Bonus yield in percent
BreakEven	BreakEven	Break Even
CalcLeverage	CalcLeverage	Leverage
CalcUndHistVola	CalcUndHistVola	Max volumen from last 30 days
Cancellation	Cancellation	Specifies whether the product contains cancellation (j=yes or n=no)
Cap	Cap	Cap / ceiling price of the certificate
CapitalProtection	CapitalProtection	If there is capital protection included
Currency	Currency	Currency of the derivative
CurrRiskProtection	CurrRiskProtection	Whether the product comprises protection against currency risk (j=yes, n=no or -=currency protection is obsolete)
Delta	Delta	Delta
DescriptionDE	DescriptionDE	Supplemental data of the product (Deutsch)
DescriptionEN	DescriptionEN	Supplemental data of the product (English)
DiscountAbsolute	DiscountAbsolute	Discount
DiscountInPerc	DiscountInPerc	Discount in percent
DistanceToCap	DistanceToCap	Distance to cap
DistanceToCapPerc	DistanceToCapPerc	Distance to cap in percent
DistanceToKnockOutLevel	DistanceToKnockOutLevel	Distance to Knock-Out
DistanceToKnockOutLevelPerc	DistanceToKnockOutLevelPerc	Distance to Knock-Out in percent
DistanceToSafetyLevel	DistanceToSafetyLevel	Distance to Safety Level
DistanceToSafetyLevelPerc	DistanceToSafetyLevelPerc	Distance to Safety Level in percent
DistanceToStrikePrice	DistanceToStrikePrice	Distance to Strike Price
DistanceToStrikePricePerc	DistanceToStrikePricePerc	Distance to Strike Price in percent
DistanceToUpperBarrier	DistanceToUpperBarrier	Distance to Bonus Level
DistanceToUpperBarrierPerc	DistanceToUpperBarrierPerc	Distance to Bonus Level in percent
DividendPayment	DividendPayment	Dividend payment
ExerciseRatio	ExerciseRatio	How many securities of the underlying will be supplied for one security (warrant or certificate)

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ExerciseStyle	`ExerciseStyle`	a(merican), e(uropean), m(ix), b(ermuda)
Expiration Date	`Expiration Date`	Expiration Date
ExpirationDays	`ExpirationDays`	Days till expiration date
FairValue	`FairValue`	Fair value calculated with Black-Scholes formula
Fees	`Fees`	Specifies whether separate fees will be charged for the product (management compensation and s.o.) (j=yes or n=no)
FirstTradingDate	`FirstTradingDate`	Date on which the security can be traded for the first time
Gamma	`Gamma`	Gamma
ImpliedVola	`ImpliedVola`	Implied Volatility
ImpliedVolaAsk	`ImpliedVolaAsk`	Implied Volatility (Ask)
ImpliedVolaBid	`ImpliedVolaBid`	Implied Volatility (Bid)
InterestRate	`InterestRate`	Interest rate (coupon)
IntrinsicValue	`IntrinsicValue`	Intrinsic Value
IsRolling	`IsRolling`	Field specifies whether instrument is rolling (j=yes or n=no)
Issuer	`Issuer`	Issuer
IssueSize	`IssueSize`	Amount of securities issued originally
KnockIn	`KnockIn`	Security level
KnockOut	`KnockOut`	Knock-out-barrier
KnockOutDate	`KnockOutDate`	Knock-Out level touched
LastTradingDate	`LastTradingDate`	Date on which the security can be traded for the last time
Leverage	`Leverage`	Various lever type characteristics are listed: 1=no or 2=yes or 3=in parts
MaximumYieldAbs	`MaximumYieldAbs`	Maximum yield
MaximumYieldPaPerc	`MaximumYieldPaPerc`	Maximum yield in percent per year
MaximumYieldPerc	`MaximumYieldPerc`	Maximum yield in percent
MaxSpreadEuro	`MaxSpreadEuro`	Maximum difference between the bid and the offer price (as an absolute homogenised value) at EUWAX
MaxSpreadPerc	`MaxSpreadPerc`	Maximum difference between the bid and the offer price at EUWAX in percent
Moneyness	`Moneyness`	Moneyness
NominalValue	`NominalValue`	Nominal value (of reverse convertibles or instruments with a percentage quotation)
Omega	`Omega`	Omega
OptionType	`OptionType`	Type of the option: Call/Put
Parity	`Parity`	Parity

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ParityReturn	ParityReturn	Return Parity
ParityReturnPA	ParityReturnPA	Return Parity per year
ParticipationRate	ParticipationRate	From a certain price the investor takes part with a specific participation rate in the increase of the underlying instruments of a certificate. Interpretation of the data: 1,3000 means 130%, 8000 means 80%
PaymentDate	PaymentDate	Payment date of the security
Premium	Premium	Premium
PremiumPA	PremiumPA	Premium per year
ProductCategory	ProductCategory	ProductCategory
ProductName	ProductName	Name of the product provided by the issuer
ProductType	ProductType	ProductType
RangeStart	RangeStart	Start value / lower border
RangeStop	RangeStop	Stop value / upper border
RatingDate	RatingDate	Date of the last rating
RedemptionPrice	RedemptionPrice	If RedemptionPrice is NULL -> = CAP * ExerciseRatio
Rho	Rho	Rho
RiskClass1	RiskClass1	Risk class 1: security oriented
RiskClass2	RiskClass2	Risk class 2: moderately risky
RiskClass3	RiskClass3	Risk class 3: risky
RiskClass4	RiskClass4	Risk class 4: increasingly risky
RiskClass5	RiskClass5	Risk class 5: speculative
RiskFit	RiskFit	Best fitting risk class
SecurityLevelTouched	SecurityLevelTouched	Date when the security level was touched Notice: We only deliver data in this field for securities listed in Stuttgart of the category Bonus and Discount+Pro.
SecurityLevelValidFrom	SecurityLevelValidFrom	Activation date of security level
SidewaysYieldPaPerc	SidewaysYieldPaPerc	Sideways yield in percent per year
SidewaysYieldPerc	SidewaysYieldPerc	Sideways yield in percent
Spread	Spread	Spread
SpreadHomogen	SpreadHomogen	Spread Homogen
SpreadMove	SpreadMove	Spread Move
SpreadRelative	SpreadRelative	Spread Ask / Spread Bid in relation to Spread Ask
StopLoss	StopLoss	Field for derivative leverage product category (1=knock out with stopp loss, 2=knock out without stopp loss, -)
Strike	Strike	Strike price
Theta	Theta	Theta

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TimeValue	TimeValue	Time Value
TimeValueMove	TimeValueMove	Time Value Move
Und ISIN	Und ISIN	Und ISIN
UndBasket	UndBasket	Whether the underlying includes a basket (j=yes or n=no)
UndFuture	UndFuture	Whether the underlying includes a future (j=yes or n=no)
UndNameOriginal	UndNameOriginal	Name of the underlying instrument (as supplied by the issuer)
UndNameSymbol	UndNameSymbol	Name of the underlying instrument (symbol name)
UndType	UndType	Date where the Ratios were calculated
UpdateDate	UpdateDate	Date of changing conditions for this certificate in the cases: Change of: Strike price / Subscription ratio / Cap / Security level /Knock-out-barrier / Range I / Range II / Bonus level / Basket: composition of underlying changes
VariableAmount	VariableAmount	This specifies the smallest variably tradable number of items
Vega	Vega	Vega

VWAP

VAvgVol	VAvgVol	Average Volume per trade
VFVar	VFVar	Define the percentage fraction for VWAP Fractional Volume (VFVol) calculation
VFVol	VFVol	Fraction of the VWAP Total Volume (VVolume) as defined in VFVar parameter (in %).
VPrice	VPrice	Calculated VWAP price
VPriceF	VPriceF	Start Price of the custom VWAP price range
VPriceT	VPriceT	End Price of the custom VWAP price range
VStdDev	VStdDev	Standard Deviation of the VWAP Price
VTrans	VTrans	Numbers of transactions for a trading session
VVolF	VVolF	Start Volume of the custom VWAP volume range
VVolT	VVolT	End Volume of the custom VWAP volume range
VVolume	VVolume	Calculated VWAP Total Volume
VWAP Button	V	VWAP Change to Prev VWAP

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HTTP Trading Integration for Online Brokers

Many online brokers offer a web based trading platform to their customers. This platform is usually displayed in a web browser window.

With TeleTrader Professional, you can directly access your online trading accounts and portfolios. The information is displayed in an embedded browser window (see Web Watch on page 62). Additionally, you can place orders by calling up the online order mask of your broker and transferring symbol information from Professional to the trading platform.

Several pre-configured brokers are available (see Available Brokers on page 437). If your broker is not among them, you can contact us (see Customer Support on page 534) – we will be happy to check the possibility of integrating new brokers.

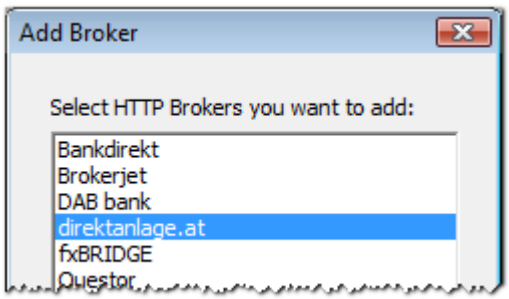
Creating Brokers and Portfolios

Before you can start using the HTTP trading integration for accessing your portfolio and placing orders, you have to create a broker and portfolio configuration. You can also define additional brokers and portfolios.

To create a broker and a portfolio

Note The following steps only apply to the first broker and portfolio that you create. For instructions how to add more brokers and portfolios, see below.

- On the **Trade** menu, click **HTTP Trading > Add broker**.
- In the **Add Broker** dialog, select the broker that you want to add and click **OK**.



- On the left side of the **Set HTTP Broker Properties** dialog, choose **Portfolios**.

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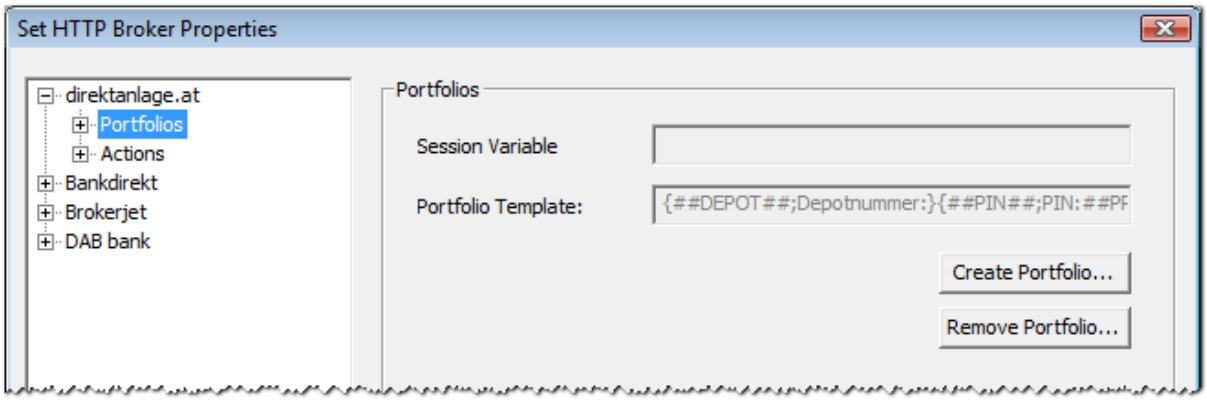
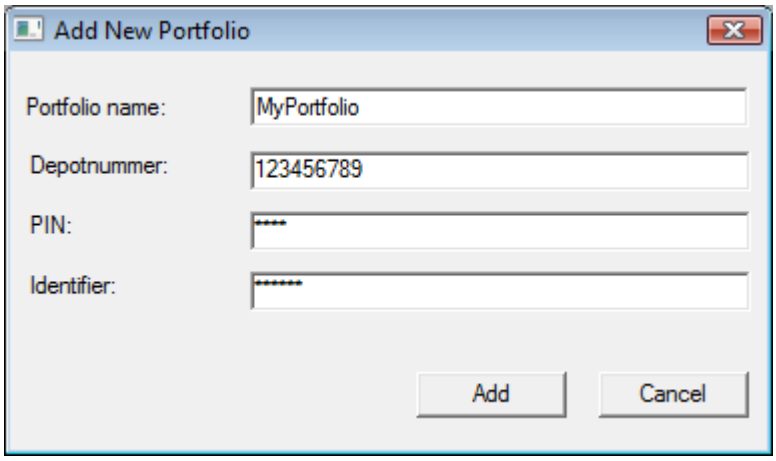
- On the right side of the dialog, click **Create Portfolio**.



- In the dialog **Add New Portfolio**, enter the name and login data of your portfolio. The available fields depend on the broker. See Available Brokers on page 437.



- Your portfolio is now added on the left side of the dialog under the entry **Portfolios**. Next, you should log in to your portfolio: See Logging In and Accessing a Portfolio on page 431.

To add more brokers

- On the **Trade** menu, click the name of any broker and then **Set broker properties**. For example: **direktanlage.at > Set broker properties**.
- In the **Set HTTP Broker Properties** dialog, click **Manage > Add Broker**.
- In the **Add Broker** dialog, select the broker that you want to add and click **OK**.
- You can now create a portfolio for this broker.

To add more portfolios

- On the **Trade** menu, click the name of the broker where you want to add the portfolio and then **Set broker properties**. For example: **direktanlage.at > Set broker properties**.
- On the left side of the **Set HTTP Broker Properties** dialog, choose **Portfolios**.
- On the right side of the dialog, click **Create Portfolio**.
- In the dialog **Add New Portfolio**, enter the name and login data of your portfolio. The available fields depend on the broker. See Available Brokers on page 437.
- Your portfolio is now added on the left side of the dialog under the entry **Portfolios**. Next, you should log in to your portfolio: See Logging In and Accessing a Portfolio on page 431.

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Logging In and Accessing a Portfolio

You can automatically log in to your portfolio with the account data that you have entered in your portfolio configuration when you created the portfolio. After logging in, you can display some pre-configured information pages with TeleTrader Professional menu commands.

To log in to your portfolio

- On the **Trade** menu, click the name of the broker, then the name of the portfolio, and **Login**. For example: **direktanlage.at > MyPortfolio > Login**.
- A web watch browser window with the online trading platform of your broker is displayed. Depending on your broker, you might have to enter additional data to complete the login process. See Available Brokers on page 437.

To show information from your portfolio

- On the **Trade** menu, click the name of the broker, then the name of the portfolio, and the type of information you want to access. For example: **direktanlage.at > MyPortfolio > Order Book**.
- The following pages are available:

Portfolio Overview	Overview page of your portfolio
Portfolio	Detailed view of your portfolio
Order Book	Overview page showing your current orders
Trading History	Overview page showing your processed trades

- A web watch browser window with the requested information is displayed. The exact content and layout depends on your broker. You can of course also use the online navigation links and controls of your broker to switch to different pages.

Placing Orders

You can place orders with your broker from all Professional documents that show quote data. Placing an order will open the online order mask of your broker. For many supported brokers, Professional can also transfer data of the selected symbol. Always check the information for accuracy and complete the form before you approve an order!

There are several different ways to place an order in TeleTrader Professional. For all of them, you first have to select a security that you want to trade. Depending on the type of document where you select the security, you have different possibilities to open a new order ticket:

- *Price page / watch list*: You can create an order by right-clicking a symbol, or by double-clicking in the Bid / Ask columns.
- *Chart*: You can create an order by right-clicking the symbol, or by double-clicking below or above the time series.
- *Market depth*: You can create an order by right-clicking in the document, or by double-clicking in the Bid / Ask columns.
- *Time and sales*: You can create an order by right-clicking the symbol, or by double-clicking in the Bid / Ask columns.
- *Options matrix*: You can trade the underlying symbol by right-clicking it, or by double-clicking in the Bid / Ask columns.

For easier placement of orders, you can also activate single-click trading: See Changing the Trading Settings on page 433.

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Warning The symbol data that is transferred to the order masked depends on the broker.

To place a buy or sell order from the context menu

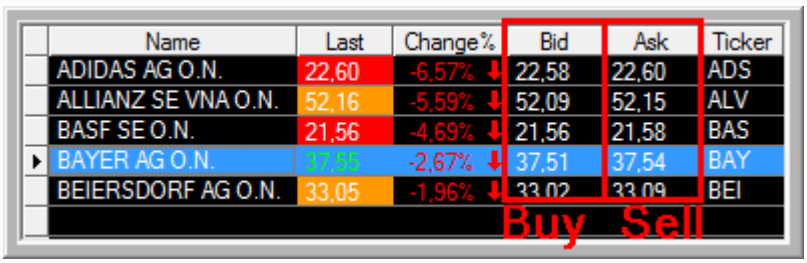
Note This method works from all TeleTrader Professional documents (price page, watch list, chart, market depth, options matrix or time and sales).

- In a Professional document, for example in a price page, right-click the symbol that you want to trade.
- Choose **Buy** or **Sell**.
- The order mask of your broker is displayed in a web watch browser window with some fields already filled.
- *Check the information for accuracy and complete the form before you approve the order!*

To place a buy or sell order from the Bid and Ask columns

Note This method works from price pages, watch lists, market depth, options matrix or time and sales documents. If you have activated single-click trading, you can use a single click instead of a double-click to place an order. See Changing the Trading Settings on page 433.

- Double-click on the **Bid** or **Ask** column of the symbol that you want to trade.
- Depending on your trading settings, the buy or sell order mask of your broker is displayed in a web watch browser window with some fields already filled. By default, **Join Bid/Ask** is activated which means that a click on the **Bid** column will open a buy order, and a click on the **Ask** column will open a sell order, like shown in the picture below. For more information, see Changing the Trading Settings on page 433.
- *Check the information for accuracy and complete the form before you approve the order!*



To place a buy or sell order from a chart document

Note If you have activated single-click trading, you can use a single click instead of a double-click to place an order. See Changing the Trading Settings on page 433.

- Double-click *below* the time series to place a buy order.
- Double-click *above* the time series to place a sell order.
- Double-click *on* the time series to show the order book.

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- *Check the information for accuracy and complete the form before you approve the order!*

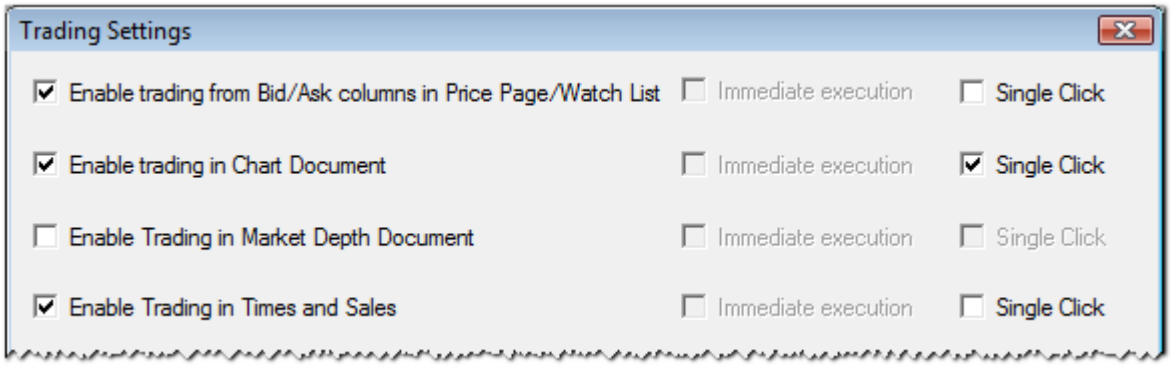
Changing the Trading Settings

You can change the behavior of the HTTP trading integration – you can deactivate trading from some Professional document types, enable single-click trading for more ease of use, and define which kind of order is created when you click on the Bid or Ask columns in a price page, watch list, market depth or time and sales document.

> **Note** The trading settings are valid for all brokers and portfolios.

To deactivate trading from some document types

- On the **Trade** menu, choose **Settings**.
- For the desired document type(s), clear the appropriate **Enable trading…** check box.



To activate single-click trading

- On the **Trade** menu, choose **Settings**.
- For the desired document type(s), select the **Single Click** check box.

To define which kind of order is created when clicking on Bid / Ask columns

- On the **Trade** menu, choose **Settings**.

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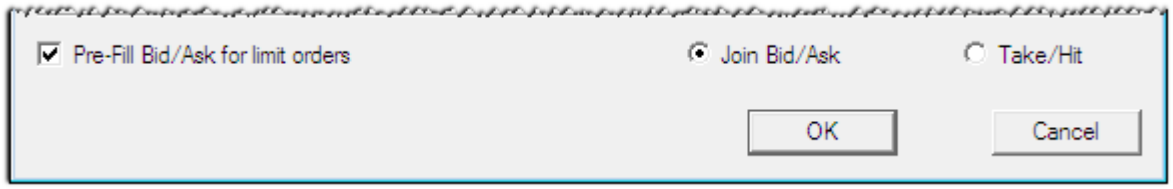
- Choose **Join Bid/Ask** or **Take/Hit** to define which kind of order is created when clicking on a **Bid** or **Ask** column.



	Clicking on Bid creates a…	Clicking on Ask creates a…
Join Bid/Ask	Buy order	Sell order
Take/Hit	Sell order	Buy order

To use the Bid / Ask price in limit orders

> **Note** This option is not available for the HTTP trading integration at the moment.

- On the **Trade** menu, choose **Settings**.
- Select **Pre-Fill Bid/Ask for limit orders**. The Bid or Ask price will automatically be suggested as the limit price when creating limit orders.

Customizing Broker Configurations

You can change the configuration of your broker, that means the links and settings that are used to request information pages and open the order mask. However, we recommend to use the default settings for a broker, especially if you are unsure about the effects of your configuration changes.

You can of course also remove a broker – its (custom) settings and portfolio configurations are then deleted as well.

To change the configuration of a broker

> **Note** Leave the default settings of the broker configuration as they are if you are not sure what the effects of a change would be.

- On the **Trade** menu, click the name of the broker and then **Set broker properties**. For example: **direktanlage.at > Set broker properties**.
- On the left side of the **Set HTTP Broker Properties** dialog, double-click **Actions** to open its sub-entries.
- Click on the sub-entry that you want to adapt:

Login	URL and configuration settings for the login page
Buy	URL and configuration settings for the buy order mask
Sell	URL and configuration settings for the sell order mask
Portfolio Overview	URL and configuration settings for the overview page of your portfolio
Portfolio	URL and configuration settings for the detailed view of your portfolio
Order Book	URL and configuration settings for the overview page showing your current orders
Trading History	URL and configuration settings for the overview page showing your processed trades

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- On the right side of the dialog, adapt the default configuration to your needs.

Control	Description
Link	URL of the page that will be requested. Use variables as placeholders for certain data fields: `##SESSIONID##` Session ID – filled if **Read session ID** is activated `##ISIN##` ISIN of the selected symbol `##SECURITY_TYPE##` Symbol type of the selected symbol `##EXCHANGE##` Exchange code of the selected symbol `##DISPLAY_NAME##` Display name of the selected symbol `##TICKER##` Ticker of the selected symbol For login data, additional portfolio-dependent variables are used.
Redirect link	Redirect the specified response page (FROM page) to another page (TO page). Syntax: `{FROM;<URL of response page>}{TO;<URL of redirect page>}`
Use POST method	Check to use HTTP POST when requesting the page Clear to use HTTP GET when requesting the page
Bring to front	Check to only bring the existing web watch browser window to the front
No GET/POST if query string already exists	Check to not do a HTTP GET or POST request if the query string would not change through that
Read session ID	Check to read the session ID from the response to this request and store it in the session variable `##SESSIONID##`
Block popups	Check to redirect pop-up windows to the existing web watch browser window

To reset the configuration of a broker to its default settings

- Export the portfolio configurations of the broker: See Customizing Portfolio Configurations on page 436.
- Delete the broker: See below.
- Create the broker again with its default settings: See Creating Brokers and Portfolios on page 429.
- Import the portfolio configurations of the broker: See Customizing Portfolio Configurations on page 436.

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To remove a broker

> **Note** *This action cannot be undone.* This will remove the broker with all its configured portfolios. You can create the broker again, but you can only restore the portfolio configuration if you have exported it before.

- On the **Trade** menu, click the name of the broker and then **Set broker properties**. For example: **direktanlage.at > Set broker properties**.
- In the **Set HTTP Broker Properties** dialog, click **Manage > Remove Broker**.
- In the **Remove broker** dialog, select the broker that should be removed and click **OK**.
- The broker is removed including all configured portfolios.

Customizing Portfolio Configurations

You can change the login data (account data) for your portfolios. If you are using more than one portfolio, you can define one of them as your default portfolio (the default portfolio is used for placing orders when you are logged in into more than one portfolio at once).

When you want to transport your portfolio configuration to another Professional installation, or save it to disk, you can export the configuration as an XML file and later re-import it in Professional. Of course, you can also remove portfolios from Professional completely.

To change the login data of a portfolio

- On the **Trade** menu, click the name of the broker and then **Set broker properties**. For example: **direktanlage.at > Set broker properties**.
- On the left side of the **Set HTTP Broker Properties** dialog, choose **Portfolios**, and then the name of the portfolio. For example: **Portfolios > MyPortfolio**.
- On the right side of the dialog, edit the login data of the portfolio. The fields available depend on the broker. See Available Brokers on page 437.

To set a default portfolio

- On the **Trade** menu, click the name of the broker, then the name of the portfolio, and **Set as default portfolio**. For example: **direktanlage.at > MyPortfolio > Set as default portfolio**.

To export a portfolio configuration

- On the **Trade** menu, click the name of the broker and then **Set broker properties**. For example: **direktanlage.at > Set broker properties**.
- In the **Set HTTP Broker Properties** dialog, click **Manage > Export Portfolio**.
- In the **Save as** dialog, enter the name for the XML configuration file in the **File name** field.
- Choose the location where you want to save the XML configuration file. Professional will suggest to save it into your **Documents** folder. You can also use a different location.
- Click **Save**.

To import a portfolio configuration

- On the **Trade** menu, click the name of the broker and then **Set broker properties**. For example: **direktanlage.at > Set broker properties**.
- In the **Set HTTP Broker Properties** dialog, click **Manage > Import Portfolio**.

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- In the **Open** dialog, select the XML configuration file that you want to import.
- Click **Open**.

To remove a portfolio

> **Note** *This action cannot be undone.* This will remove the portfolio with its configuration. You can only restore the portfolio configuration if you have exported it before.

- On the **Trade** menu, click the name of the broker and then **Set broker properties**. For example: **direktanlage.at > Set broker properties**.
- On the left side of the **Set HTTP Broker Properties** dialog, choose **Portfolios**.
- On the right side of the dialog, click **Remove Portfolio**.
- In the **Remove Portfolio** dialog, select the portfolio that should be removed and click **OK**.

Available Brokers

The following brokers are currently supported in the HTTP trading integration:

direktanlage.at

- *Portfolio configuration*: Enter your depot number ("Depotnummer"), PIN and identifier.
- *Login*: You are logged in automatically and redirected to the start page of your portfolio.
- *Placing an order*: The display name of the symbol is transferred to the online trading platform.

bankdirekt.at

- *Portfolio configuration*: Enter your bank code ("Bankleitzahl"), account number ("Konto oder Depot") and disposer number ("Verfügernummer").
- *Login*: To complete the login you have to enter your PIN. You are then redirected to the overview page of your portfolio.
- *Placing an order*: The display name and exchange of the symbol are transferred to the online trading platform.

brokerjet

- *Portfolio configuration*: Enter your user name ("Benutzer-Name") and password ("Benutzer-Passwort").
- *Login*: You are logged in automatically and redirected to the start page of your portfolio.
- *Placing an order*: The display name and exchange of the symbol is transferred to the online trading platform.

> **Warning** When placing an order, the order mask defaults to *Buy*, even when you have chosen *Sell* in Professional!

DAB bank

- *Portfolio configuration*: Enter your access number ("Zugangsnummer"), account number ("Kontonummer"), PIN and identifier.
- *Login*: You are logged in automatically and redirected to the start page of your portfolio.
- *Placing an order*: The display name and exchange of the symbol is transferred to the online trading platform.

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Connection Settings

In this section, you will find an overview of the different connection settings for connecting TeleTrader Professional to the Market Data Server (MDS). This connection is needed to collect real-time and historic quotes, news and fundamental data.

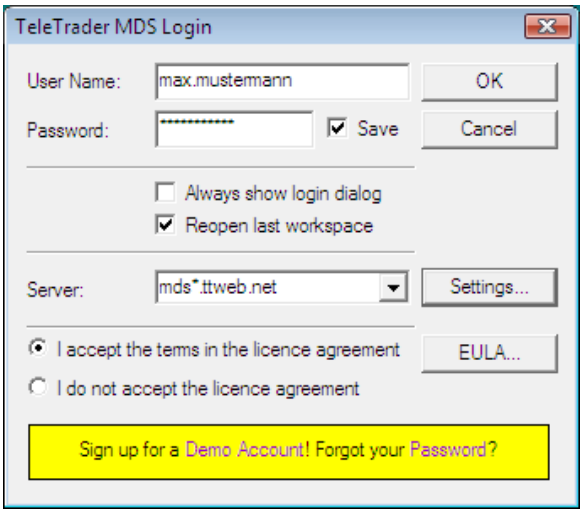
TeleTrader MDS Login Dialog

On each start, TeleTrader Professional must connect to the Market Data Server (MDS) to collect real-time and historical quotes, news and fundamental data from multiple data feeds. On the first start of TeleTrader Professional, the **TeleTrader MDS Login** dialog is shown automatically. On future logins, the login dialog will only be displayed when the option **Always show login dialog** is selected, or when you hold the SHIFT key while starting Professional.

To enter your login data and startup settings

- The TeleTrader MDS Login dialog should be displayed automatically on the first start of Professional.

> **Note** If you have disabled the login dialog, but later want to change your login data, hold the SHIFT key while starting TeleTrader Professional. You can also change the setting under **Tools > Datafeed Options**.



Control	Description
User Name	Enter the TeleTrader Professional user name that you have received via e-mail.
Password	Enter the password that you have received via e-mail.
Save	Check to save your login data. The next time you log in, you don't have to enter your user name and password again.
Always show login dialog	Check to display the TeleTrader MDS login dialog on every start of Professional.
Reopen last workspace	Check to automatically open the workspace that you worked with last on every start of Professional.
Server	Enter the address of the TeleTrader Market Data Server. The default setting is *mds*.ttweb.net*.

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	Change this setting to *91.220.8.135*, *91.220.8.136*, *91.220.8.137* or *91.220.8.138* if you use a SOCKS proxy.
Settings	Click on this button to change the connection settings (see Connection Settings in the Login Dialog on page 439).
I accept the terms in the licence agreement **(I do not accept the licence agreement)**	You have to accept the terms in the licence agreement to be able to log in to TeleTrader Professional.
EULA	Click on this button to view the End User Licence Agreement.
Sign up for a Demo Account!	Click on this link to create a free demo account for TeleTrader Professional.
Forgot your Password?	Click on this link to send your password to the e-mail address that you provided during the registration process.

Connection Settings in the Login Dialog

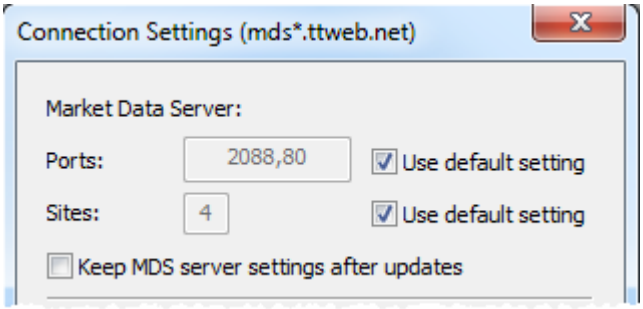
In the **TeleTrader MDS Login** dialog, you can change the connection settings that are used to connect TeleTrader Professional to the Market Data Server to collect quotes and news, and the proxy settings used to collect fundamental data (company profiles and analyst recommendations) via a web service. We recommend to use the default settings and only change those if you have problems connecting to the TeleTrader servers (see also Connection Problems on page 445).

To access the **Connection Settings** dialog, click **Settings** in the **TeleTrader MDS Login** dialog.

> **Note** If the login dialog is not shown on the start of TeleTrader Professional, hold the SHIFT key while starting TeleTrader Professional.

Market Data Server settings

These settings control the connection to the Market Data Server. We recommend to always use the default settings.



Control	Description
Ports	Port numbers of the incoming connection from the remote server. Multiple ports must be separated with a comma. These ports must be open for the connection to the Market Data Server. Defaults ports are *2088* and *80*.
Sites	Number of Market Data Server sites that are available for connection. Default value is *4*.
Use default setting	Check to use the default port or site settings. Clear to enter your own port or site settings.
Keep MDS server settings after update	Check to keep all servers that you have successfully connected to in the past in the **Server** list on the Login dialog even after a software update.

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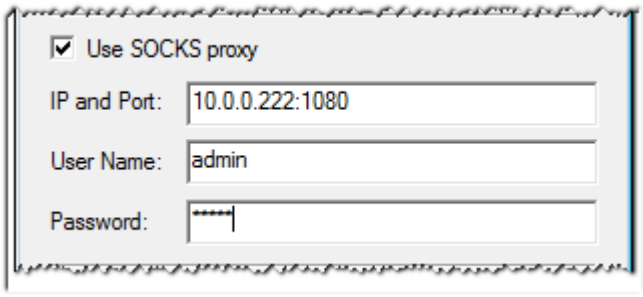
SOCKS proxy settings

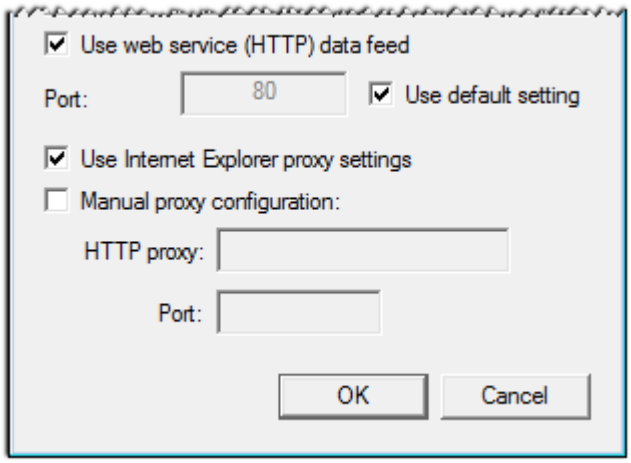
Use these settings only if you have to use a SOCKS proxy for connecting to the Market Data Server and are aware of its configuration. You have to manually set the entry **Server** in the **TeleTrader MDS Login** dialog to *91.220.8.135*, *91.220.8.136*, *91.220.8.137* or *91.220.8.138* when you are using a SOCKS proxy.



Control	Description
Use SOCKS proxy	Check to connect to the Market Data Server using a SOCKS proxy.
IP and Port	IP address and port of the SOCKS proxy divided by a colon, for example *10.0.0.222:1080*. Ask your network administrator for your SOCKS configuration.
User Name	User name required by your SOCKS configuration. Leave empty if no user authentication is required.
Password	Password required by your SOCKS configuration. Leave empty if no user authentication is required.

Web Service settings

These settings are used for the collection of fundamental data (company profiles and analyst recommendations), and not for real-time quote data feeds.



Control	Description
Use web service (HTTP) data feed	Check to enable the web service for fundamental data.
Port	Port number of the web service. This port must be open for the collection of fundamental data. Default port is *80*.
Use default setting	Check to use the default port settings. Clear to enter your own port settings.

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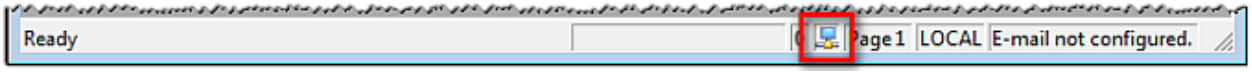
Use Internet Explorer proxy settings	Check to use the proxy settings of Internet Explorer.
Manual proxy configuration	Check to enter a different proxy configuration below.
HTTP proxy	Address of the HTTP proxy.
Port	Port of the HTTP proxy.

Monitoring the Connection on the Status Bar

Once TeleTrader Professional has successfully connected to the Market Data Server and the program is started, you can monitor the status of the connection on the status bar:



Changes in the connection status are indicated with an icon:

	Connection is established (*Connected*)
	Connection is interrupted (*Disconnected*)
	Connection is being reestablished (*In progress*)

To reconnect to the Market Data Server

When Professional loses the connection to the Market Data Server, you can try to establish a new connection.

- Right-click on the connection status icon and choose **Connect**.
- Professional tries to reestablish the connection.

> **Note** You can also manually interrupt the connection to the Market Data Server by choosing **Disconnect**.

To change the settings for automatic reconnection

You can define how Professional reacts if it loses the connection to the Market Data Server.

- Right-click on the connection status icon and choose **Settings**.
- On the left side of the dialog, choose **Settings**.

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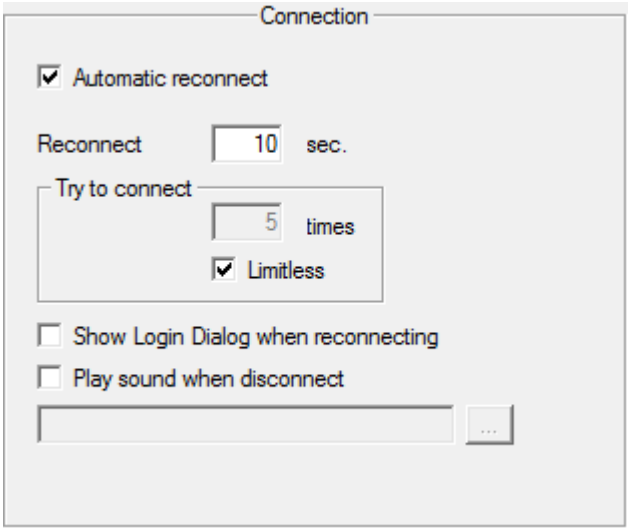
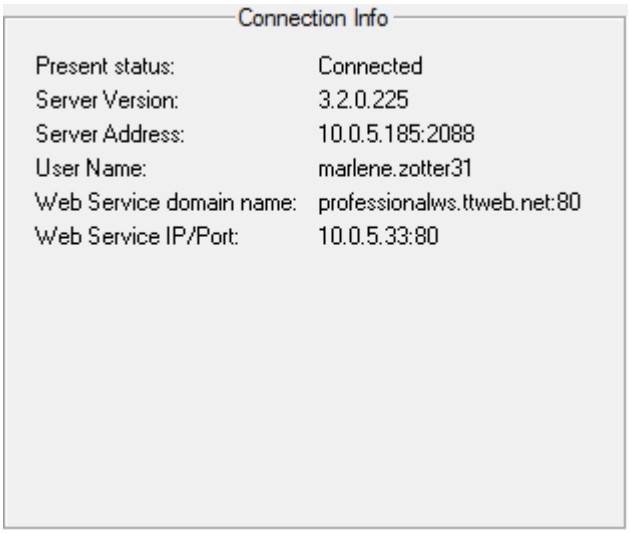
- On the right side of the dialog, adapt the default settings to your needs.



Control	Description
Automatic reconnect	Check to let Professional try to reestablish the connection automatically.
Reconnect x sec.	Enter the amount of seconds after which Professional tries to reconnect.
Try to connect x times	Enter the number of times that Professional tries to reconnect.
Limitless	Check to let Professional try to reconnect an unlimited number of times (until the connection is reestablished). Clear to let Professional try to reconnect only for the number of times defined above (even if the connection cannot be established).
Show Login Dialog when reconnecting	Check to show the login dialog when Professional tries to reconnect.
Play sound when disconnect	Check to play a sound when the connection is lost. You have to choose the sound file (WAV format) that should be played.

To view detailed connection status information

- Right-click on the connection status icon and choose **Settings**.
- On the left side of the dialog, choose **Connection Info**.



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Label	Description
Present Status	General status of the connection (*Connected* or *Disconnected*)
Server Version	Version number of the connected Market Data Server (quote data and news)
Server Address	IP address and port of the connected Market Data Server
User Name	Currently logged-in user
Web Service domain name	Domain name of the connected Web Service (fundamental data)
Web Service IP/Port	IP address and port of the connected Web Service

Connection Log in the Information Pane

You can also see information about the connection between TeleTrader Professional and the Market Data Server in the *Information pane*. The information is shown as a continuous log.

> **Note** Like all other panes, the Information pane can be undocked and moved on the screen. See Undocking, Moving and Hiding Panes on page 144.

To display the Information pane

- On the **View** menu, click **Information Pane**.

> **Note** For all time data in the Information pane Greenwich Mean Time (GMT) is used.

To copy the data from the Information pane

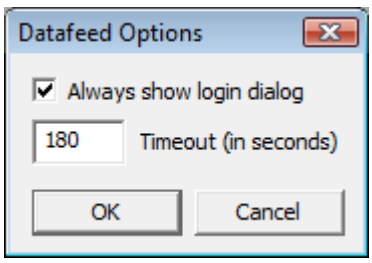
- Right-click on the Information pane and choose **Select All**.
- Right-click again and choose **Copy to Clipboard**.
- Insert the copied data into another program or text editor.

Datafeed Options

In the **Datafeed Options** dialog, you can change the display settings for the login dialog, and set a timeout for the connection.

To change the datafeed options

- On the **Tools** menu, choose **Datafeed Options**.
- In the **Datafeed Options** dialog, adapt the default settings to your needs.



Control	Description

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Always show login dialog	Check to display the TeleTrader MDS login dialog on every start of Professional.
Timeout (in seconds)	Enter the timeout in seconds after which the connection is considered interrupted.

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Troubleshooting

This section gives you some tips as to what you can do when you encounter a problem while working with TeleTrader Professional. If you cannot log in, or did log in but lost the connection afterwards, the sections Connection Problems on page 445 and Testing your Connection with the Connectivity Checker on page 446 might help you.

When you see an error message after login, please refer to the section Error Messages on page 447. If you want to contact the support team and send specific data about a problem, look at the sections Sending an Error Report (Support Package) on page 449 or Reporting Bad Ticks or Wrong Data on page 449.

Connection Problems

If you cannot connect to the TeleTrader Market Data Server, TeleTrader Professional will either not start, or you will only be able to work with your offline database (see Using Charts Offline on page 242). If you are experiencing connection problems, follow the guide below to find and eliminate the possible cause for the problems.

I cannot log in

- *You might receive an error message that gives you further hints as to where the problem lies.*
  See Error Messages on page 447.
- *Make sure that the data in the login dialog is correct.*
  - You can copy your user name and password from the e-mail with your login data and paste them into the login dialog to make sure you do not mistype any character. Be careful not to copy any additional blanks from the e-mail.
  - Make sure that the server name in the **Server** field of the login dialog is set to **mds*.ttweb.net**
    Exception: When you use a SOCKS proxy, the address should be set to **91.220.8.135**, **91.220.8.136**, **91.220.8.137** or **91.220.8.138**
- *Check if your Internet connection in general is still working.*
  Open a web browser and try to go to some websites to verify this. If the Internet connection does not work, contact your network administrator or Internet service provider.
- *Check if Windows Management Instrumentation service is enabled.*
  Click on the **Windows Start** button and choose **Control Panel** > **Administrative Tools** > **Services**. Right-click **Windows Management Instrumentation** and choose **Properties** from the context menu. In the **Properties** dialog under the **General** tab, make sure that the **Startup type** is set to **Automatic**.
- *Test the connection with the Connectivity Checker.*
  See Testing your Connection with the Connectivity Checker on page 446. If the test is successful, your network settings are correct. Check your login data again or contact the support team.
- *Contact your network administrator and ask if your Internet connection and firewall is configured correctly to allow the connection to the Market Data Server.*
  See System Requirements on page 451.
- *If the firewall settings cannot be changed accordingly, you can also try to connect using HTTP Tunneling software.*
  See Alternative Ways to Connect to the TeleTrader Servers on page 456.
- *If you have already successfully logged in before: Contact your network administrator and ask if there were any changes in the Internet connection.*
  Common problems are changes in the firewall configuration. See System Requirements on page 451.
- *Enter* **mds0.ttweb.net** *in the Server field of the login dialog and try to connect.*
  This should only be a temporary workaround. Change the setting to **mds*.ttweb.net** again as soon as your connection problems are resolved.

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- *Contact the support team*.
  See Customer Support on page 534.

I was logged in successfully, but the connection was lost

When the connection between TeleTrader Professional and the Market Data Server is lost, the connection status icon in the status bar will show that Professional is disconnected.

- *Check if your Internet connection in general is still working.*
  Open a web browser and try to go to some websites to verify this. If the Internet connection does not work, contact your network administrator or Internet service provider.
- *Try to reconnect.*
  See Monitoring the Connection on the Status Bar on page 441.
- *Try to close Professional and log in again.*
  If you still cannot log in, you might receive an error message that gives you further hints as to where the problem lies. See Error Messages on page 447.
- *Contact your network administrator and ask if there were any changes in the Internet connection.*
  Common problems are changes in the firewall configuration. See System Requirements on page 451.
- *Contact the support team*.
  See Customer Support on page 534.

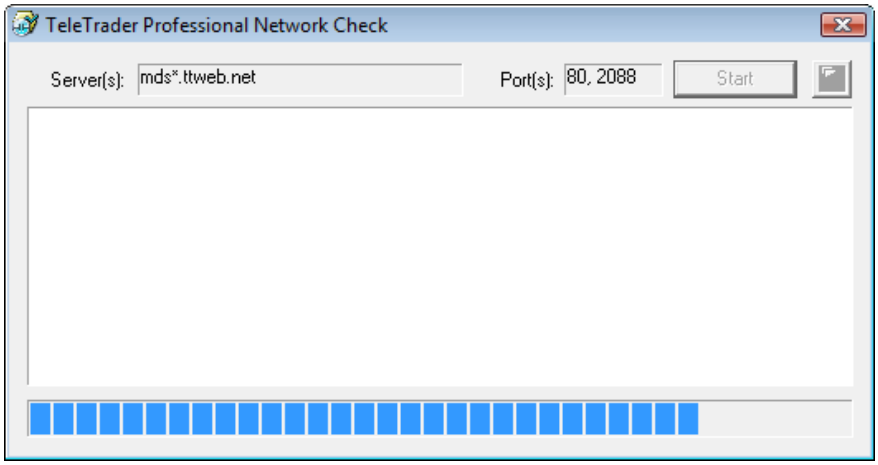
Note Sometimes your connection might be lost if you are logged in to TeleTrader Professional on more than one computer with the same user account. TeleTrader Professional usually does not allow multiple sessions for one user at the same time, therefore all computers but one will automatically lose their connection to the Market Data Server. To connect the computer that you are working with at the moment, try to reconnect from that computer. All other computers with the same user login will be disconnected.

Testing your Connection with the Connectivity Checker

With the Connectivity Checker you can test if your computer can connect with the TeleTrader Market Data Server.

To test your connection with the Connectivity Checker

- Click on the **Windows Start** button and choose **All Programs > TeleTrader Professional > Check connectivity**.
- Click the **Start** button and wait until the blue progress bar shows that the test is completed.



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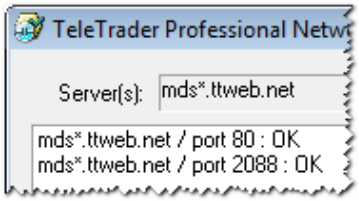
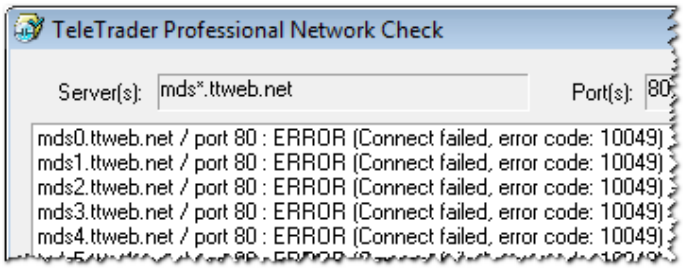
- If the connection test was *successful*, you will see one or more lines ending with **OK**.



- If the connection test *fails*, the Connectivity Checker shows one or more lines with **ERROR**.


TeleTrader Professional Network Check
Server(s):
mds*.ttweb.net
Port(s):
80
mds0.ttweb.net / port 80 : ERROR (Connect failed, error code: 10049)
mds1.ttweb.net / port 80 : ERROR (Connect failed, error code: 10049)
mds2.ttweb.net / port 80 : ERROR (Connect failed, error code: 10049)
mds3.ttweb.net / port 80 : ERROR (Connect failed, error code: 10049)
mds4.ttweb.net / port 80 : ERROR (Connect failed, error code: 10049)

- You can click the button **Copy** on the right to transfer the results to the clipboard, and then insert the copied data into another program or text editor.

Error Messages

If you cannot log in to TeleTrader Professional, you might receive one of the following error messages. Usually, they will help you to identify where the connection problem lies. For general information, see Connection Problems on page 445.

Login failed, wrong username / password

This error occurs when the user name and/or password that you provided in the login dialog are wrong. It also shows that Professional can in principle connect to the Market Data Server, which means that your other connection settings should be correct.

Tips

- *Make sure that the user name and password in the login dialog are correct.*
  Copy your user name and password from the e-mail with your login data and paste them into the login dialog to make sure you do not mistype any character. Be careful not to copy any additional blanks from the e-mail.
- *Request your password again if you have lost it.*
  Click on the link **Forgot your Password?** and enter your user name in the form that appears. Your account data will be sent to the e-mail address that you provided during the registration process.
- *Sign up for a user account.*
  If you do not know your login data yet, click on the link **Sign up for a Demo Account!** in the login dialog to sign up for a free trial account of TeleTrader Professional.

Login failed, user account expired

This error occurs when the user name that you provided in the login dialog is not valid anymore. It also shows that Professional can in principle connect to the Market Data Server, which means that your other connection settings should be correct.

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Tips

- *Contact the support team to sign up for a permanent user account.*

This version of TeleTrader Professional is not supported anymore

This error occurs when the version of TeleTrader Professional you are running on your system has fallen out of support. You have to update to a newer version of TeleTrader Professional to log in with your user account.

Tips

- Click the button **Upgrade** to automatically download and install the latest version of TeleTrader Professional. See also Automatic Update Process on page 453.
- After the update has completed, you can log in with your normal user account.

Cannot resolve server name

This error can have several reasons:

- The server name in the **Server** field of the login dialog is not correct.
- The domain name could not be resolved (possibly DNS problems).
- There are problems with the Internet connection.
- A firewall is blocking the connection.

Tips

- *Make sure that the server name in the login dialog is correct.*
  The **Server** field of the login dialog should be set to **mds*.ttweb.net**
  Exception: When you use a SOCKS proxy, the address should be set to **91.220.8.135**, **91.220.8.136**, **91.220.8.137** or **91.220.8.138**
- *Check if your Internet connection in general is still working.*
  Open a web browser and try to go to some websites to verify this. If the Internet connection does not work, contact your network administrator or Internet service provider.
- *Test the connection with the Connectivity Checker.*
  See Testing your Connection with the Connectivity Checker on page 446. If the test is successful, your network settings are correct. Check your login data again or contact the support team.
- *Contact your network administrator and ask if your Internet connection and firewall is configured correctly to allow the connection to the Market Data Server.*
  See System Requirements on page 451.
- *If the firewall settings cannot be changed accordingly, you can also try to connect using HTTP Tunneling software.*
  See Alternative Ways to Connect to the TeleTrader Servers on page 456.
- *If you have already successfully logged in before: Contact your network administrator and ask if there were any changes in the Internet connection.*
  Common problems are changes in the firewall configuration. See System Requirements on page 451.
- *Enter* **mds0.ttweb.net** *in the Server field of the login dialog and try to connect.*
  This should only be a temporary workaround. Change the setting to **mds*.ttweb.net** again as soon as your connection problems are resolved.
- *Contact the support team*.
  See Customer Support on page 534.

QuickBar Error. Line -1, Character -1

This error occurs when the QuickBar cannot be loaded. The component **msxml4.dll** might be missing.

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Tips

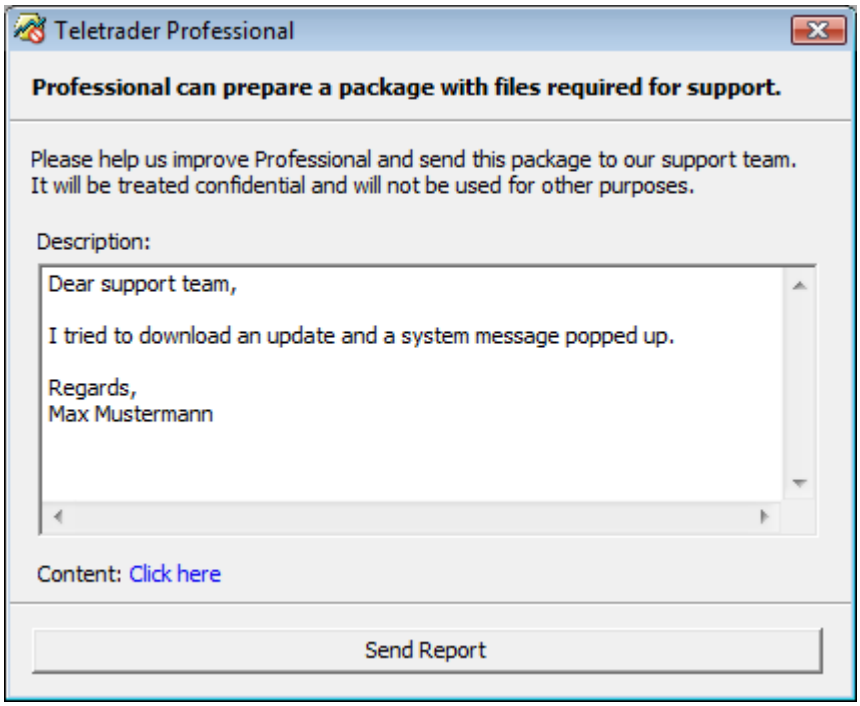
- *Download the file* **msxml4.dll**
  For example from this link: http://support.microsoft.com/kb/269238
- *Save this file into the folder C:/WINDOWS/System32*
- *Try to start Professional again*

Sending an Error Report (Support Package)

If the program encounters a serious problem, you can send an error report to the support team. Such reports are also created automatically whenever the application experiences a severe error.

To send an error report (support package)

- On the **Help** menu, click **Send support package**.
- Enter a description of the error and of all the steps that you took before the error occurred. Detailed information helps us to detect and fix potential software bugs.
- Click **Send Report**. If you want to see the contents of the support package before sending it, click on the link next to **Content**.


Teletrader Professional
Professional can prepare a package with files required for support.
Please help us improve Professional and send this package to our support team.
It will be treated confidential and will not be used for other purposes.
Description:
Dear support team,
I tried to download an update and a system message popped up.
Regards,
Max Mustermann
Content: Click here
Send Report

- The support package is generated and automatically attached to a new e-mail message. The process of collecting information after you clicked the **Send Report** button might take some minutes.
- As soon as the e-mail message appears, click **Send** to forward your report to the support team.

Reporting Bad Ticks or Wrong Data

If you see a bar or candle on a chart that seems to display wrong data, please notify TeleTrader. We will verify the data and, if necessary, correct the value as soon as possible.

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To report wrong data / bad ticks

- Right-click on the bar or candle that displays wrong data and choose **Report Bad Tick**.
- In the dialog window, select the check box **Wrong value** next to each price or value that is not correct. If there are several errors on the same bar, you can report them at the same time.
- If you want to, you can also add a comment to your report.
- Click **Send**.

Clean Reinstallation

In some cases, system errors might be caused by corrupt workspaces, documents or other data. Such problems can usually be solved with a complete new installation of TeleTrader Professional.

With the program *CleanRemoval.exe* you can completely remove TeleTrader Professional from your computer, including all settings, registry entries, default workspaces and templates. After that, you can download and install the latest version of TeleTrader Professional. Your user-specific data, such as templates, default settings etc., can be backed up and restored during the process.

Note The *CleanRemoval.exe* program file will be sent to you on request by the support team (see Customer Support on page 534).

To remove and reinstall TeleTrader Professional

- Log on to your computer as an administrator – the program can only be run with administrator rights. If you are unsure, ask your system administrator.
- Make sure that your computer is connected to the Internet – you will need an active Internet connection to download the latest version of TeleTrader Professional.
- Close TeleTrader Professional.
- Run the program *CleanRemoval.exe* that you have received from the support team. The program first determines information about the installed version. This can take some time.
- In the **Software Removal Tool** dialog, choose **Remove previous installation and install new version**.

Note When you don't want a reinstallation and just want to remove TeleTrader Professional, choose **Remove previous installation** instead.

- If you want to back up your customized settings, workspaces, documents and templates, select **Save user specific application data**.
- Click **Start Removing Files**.
- After TeleTrader Professional has been removed from your computer, the latest version is automatically downloaded and the installation wizard is started. Please do not try to start TeleTrader Professional until the words **Setup done OK** and/or **Copyback done OK** are shown in the **Software Removal Tool** dialog.

Removed data

When removing TeleTrader Professional from your computer, the following data is deleted:

- Application data in C:\Program Files\Teletrader\Professional
- Personal settings:
  - on Windows XP: *C:\Documents and Settings\[user]\Application Data\Professional*

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- on Windows Vista / Windows 7: *C:\Users\[user]\AppData\Roaming\Professional*

- Default workspaces
- Registry keys in:
  - *HKEY_CURRENT_USER\Software\Teletrader\Professional*
  - *HKEY_LOCAL_MACHINE\Software\Teletrader\Professional*

Backed-up user-specific data

If you have activated the option **Save user specific application data**, the following data is saved and restored automatically after reinstallation:

- Changed templates
- Changed studies
- Default workspaces
- Some settings and registry entries, for example chart settings, colors, FastLook, symbol search, HTTP trading integration

System Requirements

Computer

Hardware	PC with 1,66 GHz or higher
Operating System	Windows 8, Windows 7 (recommended), Windows Vista, Windows XP All operating systems need Microsoft .NET Framework 4.0, the most recent service packs and the component MSXML 6.0. Some functionalities of TeleTrader Professional need components from Microsoft Internet Explorer 7 (or higher).
RAM	1 GB We recommend at least 2 GB for large time series or a high number of charts and time and sales documents.
Free Disk Space	ca. 85 MB of free hard drive space for a complete installation
Internet Connection	Persistent Internet connection with a recommended bandwidth of at least 64 kbps

Firewalls

Ports 2088 and 80 need to be open for TCP/IP traffic to the market data server (allowing HTTP traffic is not sufficient)

- Some functions (automatic updates, fundamental data) require a HTTP connection
- Personal firewalls have to be set up to allow traffic for TeleTrader Professional. You can either enable all outgoing traffic from TeleTrader Professional, or enable outgoing TCP traffic on port 2088 and HTTP traffic on port 80
- SOCKS proxies are supported

Antivirus software

For better performance, we recommend configuring your antivirus software so that it does not scan the TeleTrader Professional folders. The Professional folders are usually located at the following paths:

- Program data: C:\Program Files\Teletrader\Professional
- Personal settings:
  - Windows XP: *C:\Documents and Settings\[user]\Application Data\Professional*

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- Windows Vista: *C:\Users\[user]\AppData\Roaming\Professional*

The executable file is called Professional.exe.

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Updates

TeleTrader Professional includes an automatic update function. On every start of the program, Professional checks if you are running the most recent version. Therefore, if a newer version is available for download, you will be notified automatically.

If you don't want Professional to perform this check on every start, you can set the update interval to weekly, monthly or quarterly checks. If you do so, you can also do an additional manual check for updates occasionally.

Note To completely remove and reinstall TeleTrader Professional (including registry keys, settings etc.), see also Clean Reinstallation on page 450.

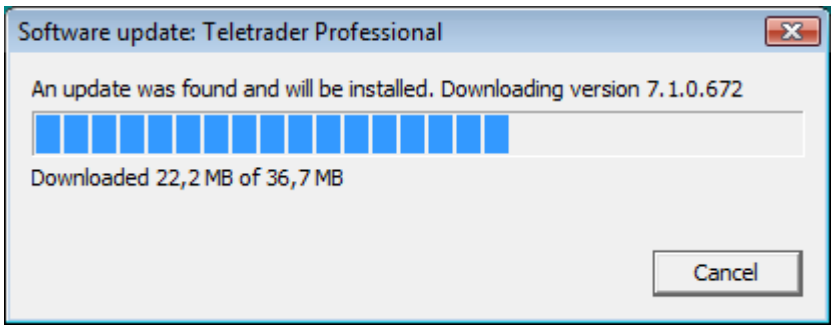
Automatic Update Process

As soon as Professional finds a new update, the update process will be run automatically when you start the program the next time.

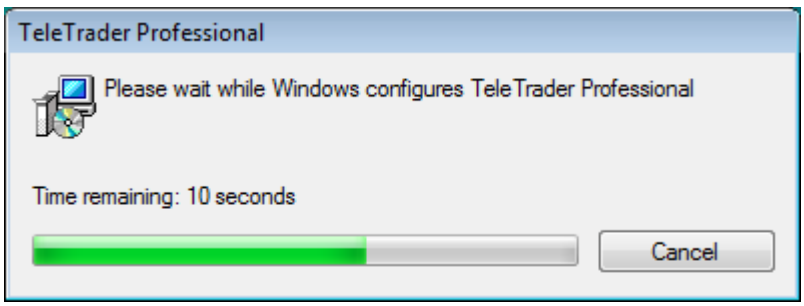
To follow the automatic update process

- The installation package is downloaded from the server. Depending on the speed of your Internet connection, this will take some minutes.

Note If you do not want to update Professional right now, click **Cancel** during the download. You will be asked to do the update again when you start the program the next time.


Software update: Teletrader Professional
An update was found and will be installed. Downloading version 7.1.0.672
Downloaded 22,2 MB of 36,7 MB
Cancel

- After the download has completed, TeleTrader Professional will be updated automatically. This process is not interactive, which means that you will not have to do anything during the update process. You might see the following window:



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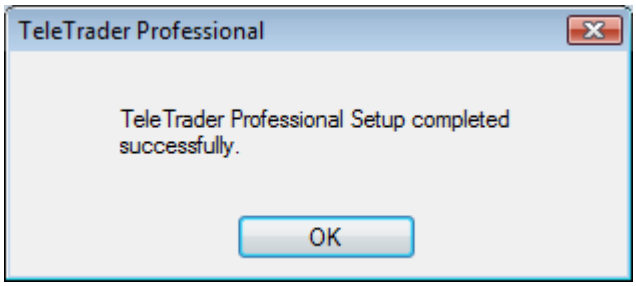
- When the update is finished, a message will appear. Even if the update process takes some time, please do not attempt to start Professional before this message is shown!



- The update is now completed. Click **OK** and start Professional again.

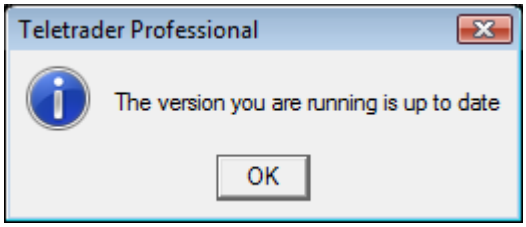
> **Note** After an update, you might have to click on the option **I accept the terms in the licence agreement** in the login dialog before you can login to Professional.

Checking for Updates

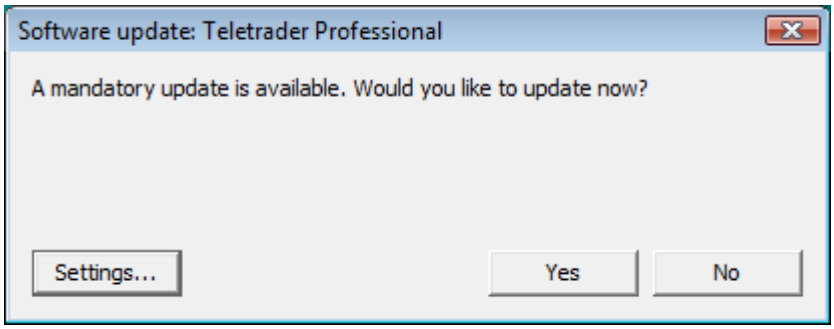
You can check manually for updates. This is especially useful if you have set the update interval to a longer period, so that Professional does not detect new updates automatically on every start.

To check for updates

- On the **Help** menu, click **Check for updates**.
- Professional looks for the latest available version and compares it with the version you are running now. If you are running the latest version this message appears:



- If a newer version is available, you will be asked to update. Click **Yes** to update Professional now.



> **Note** If you click **No**, the update process is cancelled. You should then do the update as soon as possible. We recommend to always use the latest version of Professional.

- The installation package is downloaded from the server. Depending on the speed of your Internet connection, this will take some minutes.

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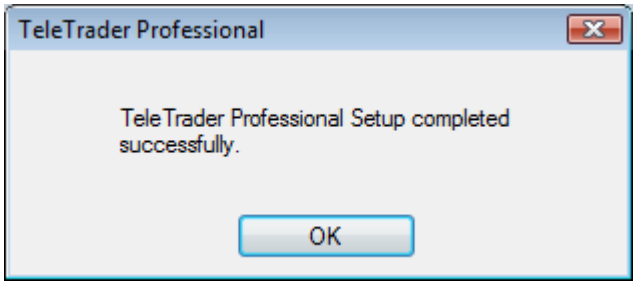
- After the download has completed, TeleTrader Professional will be closed automatically. You might be asked to save your workspace (unless you have disabled this question before).
- The automatic update process is started now: See Automatic Update Process on page 453. Please wait until the update has completed, and then start Professional again.



Changing the Update Interval

TeleTrader Professional usually checks for updates on every start of the program. If this is inconvenient for you, you can change the update interval to weekly, monthly or quarterly checks.

To change the update interval

- On the **Tools** menu, click **Options**.

> **Note** You can also click on the button **Settings** when the update dialog is shown on the screen.

- On the left side of the dialog, choose **Updater**.
- On the right side of the dialog, select the update interval that is most convenient to you (**On each start**, **Weekly**, **Monthly** or **Every 3 months**).
- Click **OK**.

> **Note** If you want to disable updates completely, please contact the support team for the appropriate registry setting.

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Third Party Software

You can use some helpful third party software tools to overcome connectivity problems related to firewall or proxy settings, share workspaces between different PCs you are working on or install TeleTrader Professional on Apple Macs.

Note TeleTrader is not connected with any of the companies producing that software and cannot guarantee that the solutions mentioned will work like expected.

Alternative Ways to Connect to the TeleTrader Servers

If local or corporate firewall or proxy settings prevents the usage of a TCP connection (which is required by Professional), and you cannot configure your firewall to allow outgoing TCP traffic to the TeleTrader servers, you can try using HTTP tunneling software which tunnels the TCP traffic through HTTP. If your environment supports the SOCKS protocol, Professional can also be configured to connect to a SOCKS proxy (see Connection Settings in the Login Dialog on page 439).

Note If you are in a corporate environment, take care not to violate your in-house security and software policies. Always ask for permission before installing software.

HTTP-Tunnel

The HTTP-Tunnel Client runs in your system tray acting as a SOCKS server. It offers a free as well as a commercial service.

- Download the HTTP-Tunnel Client from http://www.http-tunnel.com/ and install it on your computer.
- In the HTTP-Tunnel Client, choose **Settings > Add Ports/Applications** and configure the destination IP *91.220.8.135* with destination port set to *2088*.
- Start TeleTrader Professional.
- In the **TeleTrader MDS Login** dialog, set the **Server** field to the IP address *127.0.0.1*.
- TeleTrader Professional should now be able to connect to the Market Data Server.

Sharing Workspaces Through Online Drives

Storing workspaces on an online drive allows you to share these workspaces between the different PCs that you are working on (for example your home PC and your work PC). You can also upload charts, price pages or workspaces on a network drive and share it with others.

Online storage providers offer easy-to-use storage and backup facilities with various memory size packages. Some of them offer space on their servers for free. The storage space can be displayed on your desktop like any other physical drive. Files and folders can be dragged and dropped to the virtual drive directly without opening a browser window, and applications can save or load from it.

Note If you are in a corporate environment, take care not to violate your in-house security and software policies. Always ask for permission before installing software.

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Box.net

Box.net offers 1 GB of free storing space. If you need more storing space, additional paid packages are available. For more information, look at their website under http://www.box.net.

As Box.net is in principal an online service, you usually have to upload your files through their website. You can however assign a drive letter to your online storing space to save your Professional documents directly from within the program.

To do this, you can for example use Novell NetDrive, WebDrive or any other program that allows the mapping of WebDAV storage (Web-based Distributed Authoring and Versioning) to drive letters. Use the address http://www.box.net/dav with your Box.net user name and password.

Installing TeleTrader Professional on Apple Mac

If you use an Apple computer with Intel processors, you can run Professional under OSX with the help of an emulator. To run Professional on a Mac you need an additional Windows license.

Warning Depending on the configuration of your Mac (processor, RAM etc.) and the emulation software there can be minor latency in data transfer and higher CPU workload.

Parallels Desktop

Parallels Desktop simulates a virtual computer running any operating system (Windows, Linux etc.). You can work simultaneously with OSX applications and Professional without restarting your computer.

Note The following description is an example of using Parallels Desktop to install TeleTrader Professional on a Mac. You can also use other virtualization software that allows you to run a Windows operating system on your Mac.

- Download Parallels Desktop from http://www.parallels.com and install it on your computer.
- The installation assistant also leads you through the installation of the Windows operating system.
- After the installation is completed, Parallels Desktop starts automatically and creates a Windows icon on your desktop.

- To optimize the handling of Parallels Desktop, run the following commands from the **Actions** menu:
  - **Install Parallel Tools**
  - **Run Parallels Compressor**
  - Optional: **Install Kaspersky Internet Security Suite** (antivirus software)

  These procedures will take some minutes. Please wait for the completion of the respective installation sequence, Windows will be restarted afterwards.

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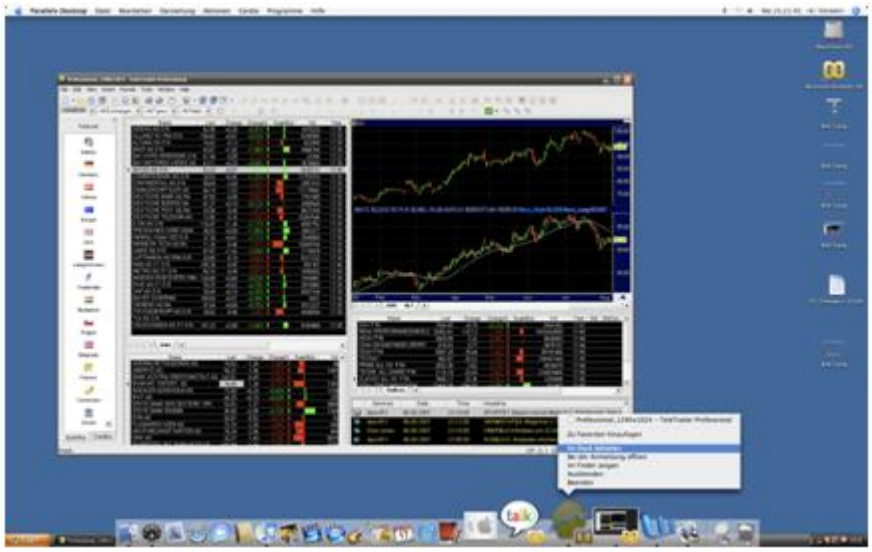
- Whenever Parallels Desktop is active, the Windows taskbar is displayed at the bottom of the screen. You can now start OSX applications as well as Windows applications.
- You can then install TeleTrader Professional on the virtual Windows operating system.
- After the installation is completed, you can include the Professional icon in the OSX dock: Right-click the icon and choose **Include in Dock**.



- To use keyboard shortcuts in emulated mode, additionally press the FN key. For example, to open the Symbol Search dialog, press FN + F7.

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TeleTrader Language

TeleTrader Professional offers a wide range of built-in tools for technical analysis. Many of those tools can be customized to fit your needs. If you need more flexibility though, you can create your own tools with the simple, yet powerful TeleTrader Language.

The TeleTrader Language is the basis for all studies (indicators and signals) inside TeleTrader Professional. It is a simple programming language that allows you to create custom studies and other technical analysis tools. In this section, you will find in-depth information about its syntax and the available functions. For information about the built-in studies, please consult the Study Reference.

What is technical analysis?

There are two basic problems for any investor and trader that he tries to solve constantly:

- What security should I trade?
- When should I enter / exit a trade?

The first problem is a question of picking the right stocks / securities, the second one is a question of timing and forecasting future price developments. To solve these problems, two major schools of thought have formed that operate on different premises: Fundamental analysis and technical analysis.

Fundamental analysis believes that every security has a certain intrinsic value that is influenced by different factors, such as industry, financial, market and overall economy conditions, the products and management of a company, asset values and capitalized value of a security, political and economic events, company news, and many more. The fundamental analyst tries to measure the intrinsic value of a security and then compares it with its current quote to find out if a security is overvalued or undervalued.

If you want to evaluate securities with fundamental analysis methods in TeleTrader Professional, you can use a wide range of tools, for example:

- Real-time news feeds and News Flash in price pages
- Company profiles and fundamental data in price pages
- Analyst recommendations
- Chart overlays
- etc.

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Technical analysis does not try to analyze the factors that lead to a price movement, but only evaluates the price movement itself, trying to find patterns and trends that may forecast the future development of a security. In contrast to the great amount of different types of data that is needed for fundamental analysis, the technical analyst only looks at the past market prices and trade volumes, and then applies different graphical and mathematical techniques to this data. As price and volume data is easily available for everyone, this method is popular with private and professional investors, whereas fundamental analysis needs a lot more of serious research to get its results.

If you want to evaluate securities with technical analysis methods in TeleTrader Professional, you can use two basic categories of tools:

- *Drawing tools*: Graphical techniques, like trend lines, trend channels, support and resistance levels, Fibonacci retracements, Pivot Points and many more.
- *Analysis tools*: Mathematical techniques, using calculations, statistics, pattern recognition techniques and many more. Most so-called indicators and signals are displayed on the chart as a visual interpretation of market activity, but they can also be inserted into price page columns. In-depth information about creating your own analysis tools will be discussed in the following sections.

Other tools to support the technical analyst are different time compressions (daily, weekly, monthly or intraday / tick data) and different chart types (bar charts, candlestick charts, point & figure charts and many more).

Creating Custom Studies

TeleTrader Professional comes with a vast range of built-in studies that are optimized, well tested and ready to use. However, you might need to adapt an existing study to your specific needs, or have an idea of how to improve it. Maybe you have come across someone else's formula that you want to try out, or maybe you have even invented your own trading strategy.

Either way, this guide will show you to create your own analysis tools (studies) using the TeleTrader Language, which is an easy programming language designed especially for this. Using three walk-through examples, you will be introduced to all necessary concepts step by step.

The TeleTrader Language uses plain English language and provides users with no programming knowledge the ability to use their own ideas and turn them into studies that can be applied within TeleTrader Professional.

Required prior knowledge

You should be familiar with the chart documents in TeleTrader Professional and with the usage of the built-in analysis tools. You should also know how to use the **Study Editor** (if you have not used it before, it is recommended that you first read Editing and Managing Studies on page 312). No programming experience is required, but some knowledge about calculating simple studies is expected.

What Is A Programming Language?

When you want your computer to perform a task for you, you have to tell it exactly what to do. Unlike humans, computers unfortunately do not understand natural English language very well, or any other natural language. Therefore you have to use a special kind of language, a programming language. In case of writing studies for TeleTrader Professional, this is the TeleTrader Language.

At first glance, a programming language usually looks like English, mixed with mathematical calculations. A part of a program written in the TeleTrader Language might look like this:

```
Result = Sum(source, period) / period;
If IsValid(Result) Then
   DrawLine("MovS", Result);
```

In this example, you first tell the computer to calculate a result with a particular (mathematical) formula. When the result is valid, the computer then should draw a line (on your chart) that represents the result.

You can see that the way you "talk" to the computer is very formalized. This is because computers do not handle ambiguity very well. Natural languages are full of multiple meanings. Although there are some rules that you should

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obey in natural language, such as grammatical and orthographical rules, you can easily "bend" them and be understood anyway. If you leave out some commas in your sentences, your friends can still guess what you meant to say. Programming languages also have rules – but computers cannot guess what you wanted to say to them. Therefore, you have to observe their rules very strictly. If, by mistake, you write "rseult" instead of "result", your human friend would probably guess that you really meant to refer to "result". The computer, on the other hand, will simply report an error.

When you use a programming language for the first time, it will probably take some time until you get used to its elements and rules: You have to learn what commands you have to give to the computer, and in what order, where to set the punctuation, how to define inputs and outputs for your program, how to calculate, store and give out results. In a way, you have to learn to think about what will happen in the computer when it executes your program.

On the other hand, this will probably also help you to gain deeper insight into how the studies and trading strategies that you create actually work. After all, you have to put down your thoughts in a very clear and structured manner in order for the computer to understand them.

Introduction to the TeleTrader Language

The TeleTrader Language is a very simple but powerful language. It uses very few elements compared to other programming languages. We will explore the most important elements with a small example program written in the TeleTrader Language to calculate and plot the *Moving Average Simple*.

```
Function movs
Returns Numeric;

Parameters
   Numeric Field source;
   Numeric period;

Variables
   Numeric s;

Begin
   s = Sum(source, period);
   Result = s / period;
   DrawLine("MovS", Result);
End.
```

You can see that different words in the code have different colors and styles: This is a way to help you differentiate between different parts of the TeleTrader Language. These colors and styles are also used in Professional – for an overview, see Syntax Coloring on page 532.

Name of the program

When you write a program, it must have a name. This is important because you later want to tell the computer which program he should run, and you do this by using the name of the program. The name (or function title) of this program is defined in its very first line:

```
Function movs
```

You can see that the name of the program, `movs`, is an abbreviation of the name of the study, *Moving Average Simple*. You cannot use its real name, because the naming rules of the TeleTrader Language do not allow blanks in a function name. You could, however, use the name `moving_average_simple`, if you wanted, because underscores are allowed.

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Results, parameters and variables

The next six lines are the so-called *declaration section* of the program. Here, you define several names and properties that you want to use in your program. This is also due to a rule of the TeleTrader Language (and of most other programming languages): Before you use something in your program, you first have to tell the computer its name. Computers, as was already explained, do not handle ambiguity very well: So you first tell them the names for everything that you want to use, and later have to stick to these names exactly as you defined them here, so that the computer knows what you are talking about.

In the declaration section, you first tell the computer that your program will calculate a number:

```
Returns Numeric;
```

Then, you describe that you will use two parameters (input values) in the program, called *source* and *period*. The parameter *source* will be a field of a security, such as its *Open* or *Close* value. The parameter *period* will be a simple number.

```
Parameters
   Numeric Field source;
   Numeric period;
```

Parameters are input values for your program. You probably already know them from the **Parameters** tab of the **Insert Study** dialog. Here, you tell the computer what parameters should be visible there.

The last part of the declaration section is optional: You can define variables here. Variables are similar to parameters; you only will never see them in the **Insert Study** dialog. This is because they are only used internally inside the program, most times to temporarily store a value that you have calculated. In our example, we tell the computer that we will only need one variable `s`, which will be used somewhere in the program to store a number.

```
Variables
   Numeric s;
```

Remember the names of the parameters and the variable that were shown here – they will soon be used in the section of the program were all the real work is done: The *execution section*.

Calculations and drawing on the screen

Now the computer knows the names and types of all the things you want to use inside the program. Time to start the real work, which means calculating the moving average and then showing it on the screen. You can see that the start of the *execution section* is marked with a special word:

```
Begin
```

The next two lines of this section are mathematical calculations that calculate a simple moving average. To understand them, you only have to know how you would calculate the moving average for a security if you had to do it yourself, for example a 21-period moving average: Sum up the last 21 values of the security, and divide them by 21.

In the example program, we do this in two steps. First, sum up all values for a specific period, and store them in the variable `s`. To make the addition easier, we use a little helper program called *Sum* that calculates this for us. We tell this function which values it should sum up (the values from our source security), and how many values it should sum up (we use the parameter *period* for this). There are several other built-in helper programs in the TeleTrader Language, and you can use them in your own programs anytime you like.

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```
s = Sum(source, period);
```

You can now see the need for the parameters that we defined above: The parameter `source` will tell the program from which security it should take the values, and the parameter `period` will tell the program for which period it should calculate the moving average. This way, you will only have to write one program, and can then use it with any security you like, and for any period you like. If you wanted to calculate a 100-period moving average, you would simply change the parameter `period` in the **Insert Study** dialog.

Now that we know the sum of the values, we only have to divide them by their number, and then already have the final result:

```
Result = s / period;
```

You now have the final result for a simple moving average. However, this result is only a number – remember that in the declaration section, we defined that the program would calculate a number as a result. Of course, we also want to show this result on the screen, so we add another line to the program:

```
DrawLine("MovS", Result);
```

Drawing on the screen is easy with the TeleTrader Language – again, a little helper function does all the work for you. You only have to tell it what it should draw: In this case, it is a line called "MovS" that should use the values from your end result.

All the work is done now. We can tell the computer that the program is over:

```
End.
```

Summary

You now should know that a program written in the TeleTrader Language is composed of three parts:

- *Function title*, where you define a name for your program
- *Declaration section*, where you tell the computer the names of all parameters and variables you want to use, and define what type the end result of your program will be
- *Execution section*, where all the calculations and drawing are actually done, and on which you will probably spend the most time and thoughts

All programs written in the TeleTrader Language must follow this basic structure.

You also have learned some of the rules of the TeleTrader Language:

- Everything you use must have a *name*, and this name must obey certain rules, such as no blanks
- You often use *mathematical calculations* to produce an end result
- You can store intermediate results in a *variable*
- Once you have the *end result*, you store it in the special variable `Result`
- You can use *helper programs* for calculating results, or for drawing the results on the screen

In the next sections, you will learn some more of the rules of the TeleTrader Language, and see some step-by-step examples of writing a program.

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Some Basic Rules

We will now take a deeper look at some of the basic rules of the TeleTrader Language. For the basic structure of a TeleTrader Language program, see the previous section Introduction to the TeleTrader Language on page 461.

Obey the naming conventions

When you think of a name for your program, its parameters and variables, you have to follow the naming rules:

- The name can only use letters, numbers or the underscore sign (_)
- The name must start with a letter
- You are not allowed to use one of the reserved words as a name (see Naming Conventions on page 486)

The good news is that the TeleTrader Language is not case-sensitive. That means that you can define and use your names in uppercase, lowercase or mixed case, and the computer won't even notice. Therefore, you can define a parameter with the name `Source`, and then use it in your program as `source`, `SOURCE`, `SOurCe`, or any other way you like.

Obey the punctuation rules

There are also some rules that you must follow regarding punctuation:

- A program must end with a full stop (`.`)
- Each command statement must end with a semicolon (`;`)

> **Note** You must not confuse a statement with a line of your program, although it often is the same. A statement is one complete command, for example one calculation or one drawing operation. Do not blindly add a semicolon to the end of every line, because some statements stretch over more than one line. To learn more about the different types of statements and their syntax, see Execution Section on page 488.

- When you use a helper program, you usually follow it with brackets. Inside the brackets, you can pass input values to the helper program. Separate multiple values with a comma: `Sum(source, period)`
- You can modify your program text for better readability: Add more white space (blanks) between words and lines, or remove all white space if you like. You can also have more than one command in one line, as long as each statement is properly ended with a semicolon.

Declare parameters and variables before you use them

Every time you want to use a variable or a parameter in your program, you have to be sure that it is properly declared in the declaration section (or function header) of your program. If you decide later that you for example need another variable, you have to add it to the variables list and give it a name, or your program won't work (because the computer does not know what you are referring to).

You also have to pay attention to the type of each variable and parameter. You cannot tell the computer that a variable will store a number, and then use it to store text. Again, your program won't work if you try this.

Define at least one input parameter

You will most probably use your program to plot something on a chart. (Of course, all calculated results that can be plotted on a chart can also be inserted in a price page column.) What you plot should help you analyze the symbol (security) that is shown in the chart. Therefore, you should define at least one parameter that you can use to tell the program which security is the base for your study.

Calculate results with expressions

You will most probably use some formula to calculate the study that is then drawn on the screen. For calculating a result, you use mathematical expressions. These basically use the same syntax that you are used to from common

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calculators: For additions, use the `+` sign, for multiplications, use the `*` sign, for divisions, use the `/` sign and so on. For more information about expressions, see Expressions on page 498.

Store intermediate results in a variable

When you cannot calculate the end result in one step, use a variable to store the intermediate result. You can use as many variables as you like.

Store the end result in the result variable

The end result is always stored in a special variable called `Result`. This variable is automatically available in all TeleTrader Language programs – you do not have to declare it! This is the only exception to the rule that you have to declare every variable before you use it. However, you still have to declare the type that your end result will be. You also do this in the declaration section, in the following line:

```
Returns Numeric;
```

Be careful – if you tell the computer that your end result will be a number, it won't accept anything else than a number! Also, you cannot use the variable `Result` if you have defined that the program will return `Nothing`.

Use helper programs

There are several helper programs available in the TeleTrader Language. Use them whenever you can – they make writing your study easier and reduce errors! You only have to be aware of two things:

- What does the helper program need to perform its task? These are the input values that you pass to the program in round brackets.
- What does the helper program return or do? Some programs just calculate a result and give it back to you, others draw something on the screen. You should know what the output of the program will be!

You can find list of all helper programs (also called functions) in the Function Reference on page 501.

Do it your way

While there are strict rules of how you must structure your program, and you must follow the language syntax down to the smallest details, there is generally more than one way to write a program.

Compare our example from the previous section:

```
Function movs
Returns Numeric;

Parameters
   Numeric Field source;
   Numeric period;

Variables
   Numeric s;

Begin
   s = Sum(source, period);
   Result = s / period;
   DrawLine("MovS", Result);
End.
```

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… with the following modification of the same program:

```
Function movs
Returns Numeric;

Parameters
   Numeric Field source;
   Numeric period;

Begin
   Result = Sum(source, period) / period;
   DrawLine("MovS", Result);
End.
```

The second example does exactly the same thing, it is only written a bit simpler. For example, it does not need a variable to store the intermediate result, because it calculates the end result in one step.

You can develop your own style in writing programs – just do it in the way that seems most intuitive to you!

Experiment!

The best way to learn a programming language is to experiment! We encourage you to play around and make modifications to the existing studies, not only in terms of style, but more importantly, in terms of functionality. If you want to see some examples of possible modifications, just read on.

Basing Your Study on an Existing Study

When you first start to create your custom studies, it is best to begin with something that is already available. You can take one of the studies that are provided by TeleTrader, and change their functionality so that they better suit your needs.

Before you start changing the source code of a study, check if you can adapt the study by using the settings that it comes with:

- *Bases and parameters*: Look at the **Parameters** tab of the **Insert Study** dialog. Can you tweak the parameters so that they fit your needs? Can you change the base element (price) used for the calculation there?
- *Appearance and styles*: Look at the **Appearance** tab of the **Insert Study** dialog. Can you change the colors, styles, and pane settings to fit your needs?

When it is necessary to change the source code to get the desired results, open the **Study Editor** for this study. We recommend to make an exact copy of the study before you do any changes – this way, you can always return to the original source code if any problems come up.

To save a study under a different name

- On the **Tools** menu, click on **Study Editor**.
- In the study list on the left side, click on the study.
- On the **File** menu of the **Study Editor** dialog, click **Save a Copy**.
- In the **Name** field, enter the name of the study as it should appear in the study list (for example in the **Insert Study** dialog).
- In the **Function Name** field, enter the name of the function used to calculate the study. Pay attention to the Naming Conventions on page 486.
- Now, change the source code of the new study on the **Source Code** tab.
- Click **Check Syntax** to check if the changes to the code are in compliance with the TeleTrader Language syntax.
- Click **Save All** when you are finished.

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To give you an idea of the possibilities that you have, and help you with your first steps with the TeleTrader Language, we have prepared some step-by-step examples for you.

Drawing More Lines on the Screen (Moving Average Simple)

This example shows an easy modification of the simple moving average that draws two additional lines on the chart.

What the study does now

The *Moving Average Simple* calculates the sum of a number of values over a selected period and divides it by their number. It then draws the result on the screen as a line.

What you want

You want the study to show two more lines:

- One that is drawn 10 percent above the central line
- One that is drawn 10 percent below the central line

How to code it

- Save the Moving Average Simple under the name `movs3`. See Basing Your Study on an Existing Study on page 466.
- Now, take a look at the source code of the study:

```
Function movs3
Returns Numeric;

Parameters
   Numeric Field source;
   Numeric period;
   Numeric shift;

Begin
   Result = Average(source, period) * (1 + shift /
   100);
   DrawLine("MovS", Result);
End.
```

- You can see that:
  - The result of the study is a number
  - You have three input parameters: *source*, which is used for the base security, *period*, which controls the number of bars (time period) that is used for calculating the average, and *shift*, which can be used to move the moving average line up or down by a certain percentage
  - You have no variables to store intermediate results
  - In the execution section, you have one line that calculates the result for the moving average
  - With the next code line, a line called "MovS" is drawn on the chart with the end result
- The only part that concerns you is the part where the line is drawn. You want to draw two additional lines, so the first step would be to just duplicate this line two times:

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```
DrawLine("MovS", Result);
DrawLine("MovS", Result);
DrawLine("MovS", Result);
```

- As you know, every element in a program has to have a unique name. Now, however, you have three lines with the same name. The next step would be to give each line its unique name. Change the name of the first line to "MovS_above" and that of the last line to "MovS_below":

```
DrawLine("MovS_above", Result);
DrawLine("MovS", Result);
DrawLine("MovS_below", Result);
```

- You now have three different lines with unique names. However, they all work with the same result data, the simple moving average, that is calculated with the first line of the execution block. You want one line to be drawn 10 percent above the moving average, and the other 10 percent below. This means that you have to adjust the value that is used to draw these lines. The easiest way to do this is by just multiplying the result with 1.1 (10 percent more) and 0.9 (10 percent less):

```
DrawLine("MovS_above", 1.1 * Result);
DrawLine("MovS", Result);
DrawLine("MovS_below", 0.9 * Result);
```

- And this is already your final result! Check the syntax of your adapted code by clicking on **Check Syntax**, save it and test your new study on a chart. You should see three lines now.

Note You might wonder if you couldn't use more flexible percentage values when drawing the additional lines: Say you want to be able to also draw lines that are 20 percent above and below the center line. Do you have to write a new study for every percentage value that you need? Of course not – that's what parameters are here for. Learn how to further customize your study here: Adding Parameters to a Study (Moving Average Simple Cont'd) on page 471.

Drawing areas and markers

What if you don't want additional lines, but areas or markers? To add other study objects is not very different to the example shown above: You only have to be aware that each of them needs different input values to be able to draw something on the screen. For a line, as you have seen, you only need a name (for example "MovS_above") and a value that it should draw.

For other study objects, you need more input:

Area Areas need two values: Where the upper line should be positioned and where the lower line should be positioned. You could for example rewrite the example above to use an area instead of two lines:

```
DrawArea("MovS_area", 0.9 * Result, 1.1 * Result);
```

Marker Markers need even more values – you have to define their name, the level where the price arrow will be positioned, if an up arrow or a down arrow should be used, and what marker text is inserted:

```
DrawMarker("BuySellMarker", Source.High, False, "Sell");
```

To learn more, see Drawing Functions on page 502.

Changing the Formula of a Study (Commodity Channel Index)

This example shows how you can change the formula of the *Commodity Channel Index* to use *Open* prices instead of *Close* prices.

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What the study does now

The *Commodity Channel Index* calculates a so-called typical price (TP) for the given period, subtracts a simple moving average (SMA) of the typical price, and divides the result by its mean deviation (MD) times a constant factor. Written as a formula, this could read:

$$CCI = \frac{TP - SMA(TP)}{MD(TP) \times 0.015}$$

Where the typical price is calculated as:

$$TP = \frac{High + Low + Close}{3}$$

The result is then plotted on the screen as a line. Additionally, two overbought/oversold level lines are added.

What you want

For some reason, you believe that the *Commodity Channel Index* would work better for you if it used the *Open* prices instead of the *Close* prices in its calculation of the typical price. Additionally, you feel that the constant factor should be changed from 0.015 to 0.020 to produce better results.

How to code it

- Save the Commodity Channel Index under the name `cci_open`. See Basing Your Study on an Existing Study on page 466.
- Take a look at the source code. You might notice that for some reason, it seems that no calculations are done here at all – only a line and an area study object are drawn.

```
Function cci_open
Returns Nothing;

Parameters
   Security Source;
   Numeric period;
   Numeric upperLevel;
   Numeric lowerLevel;

Begin
   If IsValid(Source.High) And IsValid(Source.Low) And
IsValid(Source.Close) Then
          DrawLine("CCI", funcCci(Source, period));
          DrawLine("#max", upperLevel);
          DrawLine("#min", lowerLevel);
End.
```

- Now take a closer look at the drawing function *DrawLine* that draws the CCI line. You can see that in the part where the drawing function is told what to plot on the screen, another function with the name `funcCci` is called. This function `funcCci` is the place where the actual calculation of the Commodity Channel Index is done.

```
DrawLine("CCI", funcCci(Source, period));
```

- A function call is a simple way to use the calculations of another (helper) program in your own program. When you call a function, you have to know what kind of input parameters it expect and what result it will return to you. In this case, the function `funcCci` expects two parameters *Source* and *period*, and will return the calculated number for the Commodity Channel Index. It not always necessary to separate the calculation and drawing part of a study - in this case it was done because some other studies also make use of the underlying calculations for

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the CCI, such as the signal *CCI AvgCross*. For more information about function calls, see Function Call on page 489.

- Because you want to change the calculation and not the drawing part of this study, you now have to jump to the `funcCci` function. You can do this by clicking on `funcCci` to position your cursor there, and then clicking the button **Go To** at the bottom of the window. The function `funcCci` opens in a separate **Source Editor** window.
- As you want to change this function too, save it now under the name `funcCci_open`. The new function will open in an additional tab.
- Take a look at the source code. It is quite complex, but don't be intimidated by this. You will only need to identify the parts that have to be changed – in this case, you don't have to understand all details of the program to do this.
- We will start with changing the constant factor from 0.015 to 0.020. This is pretty straightforward – you will only have to find the part where this factor is used and change it. In our case, this is the line at the bottom of the program, were the result of the function is calculated. Change 0.015 to 0.020:

```
Result = (X - avgX) / (0.020 * avgMD);
```

- The next part is a bit more tricky. You have to identify were in the program the typical price is calculated, so that you can change the price used from *Close* to *Open*. First, let's take a look at the line that calculates the result again: If you compare this with the mathematical formula for the Commodity Channel Index that we introduced at the beginning, you can see that the typical price is called `X` in the program code. Now, you will look into the code to see where `X` is calculated (look for `X = ...`). You can find this line near the beginning of the execution section:

```
X = (Source.High + Source.Close + Source.Low)/3;
```

- Now you only have to change the *Close* to the *Open* price:

```
X = (Source.High + Source.Open + Source.Low)/3;
```

- We have now finished our job of changing the way the Commodity Channel Index is calculated. Now, we have to return to the program where the drawing is done. We there need to tell the study that it should use our new calculation method instead of the old one. First, click **Save** to save your changes to the new function `funcCci_open` that you have created.
- You should now return to the source code of the function `cci_Open`. In the line where the function `funcCci` was called, change the function call so that it now uses your new function `funcCci_open`:

```
DrawLine("CCI", funcCci_open(Source, period));
```

- We are now almost finished. One last thing remains to be done: We need to check whether the change we have just done will affect another part of the program. The easiest way to do this is to scan the code for the occurrence of `Source.Close` (since this is the part that we have changed). You will find the following code line:

```
If IsValid(Source.High) And IsValid(Source.Low) And
IsValid(Source.Close) Then
```

- Now we will need to take a deeper look at what this code does to get a feeling if the changes you have done will affect this procedure. You can see that this is an `If` statement (see If Conditions on page 491 for more). `If` statements check if a condition is true before they go on with executing the program. The parameter `Source.Close` is a part of this condition – the condition checks if the *Close* price is valid before it continues with executing the program. The question is, does this affect our program? Of course: You are not using the *Close*

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price anymore in your calculation, but instead you use the *Open* price. So it would be more meaningful to check instead if the *Open* price is valid (since you don't need the *Close* price anymore). So, you should change this line to reflect this:

```
If IsValid(Source.High) And IsValid(Source.Low) And
IsValid(Source.Open) Then
```

- You have now finished all the necessary changes. Check the syntax of your adapted code by clicking on **Check Syntax**, save it and test your new study on a chart. The resulting line drawn should be different from the "normal" Commodity Channel Index. You can insert both studies into one pane to see the differences.

Adding Parameters to a Study (Moving Average Simple Cont'd)

We will revisit the three-line Moving Average Simple we created earlier (see Drawing More Lines on the Screen (Moving Average Simple) on page 467) and add a parameter to the program so that we can draw the additional two lines at any percentage we like.

What the study does now

The modified Moving Average Simple calculates a moving average (sum of a number of values divided by their number) and then draws three lines on the screen:

- A central line for the moving average
- A line 10 percent above the central line
- A line 10 percent below the central line

What you want

You want to change the program so that you do not have to always use the fixed value of 10 percent, but can draw the additional lines at any percentage. You want to be able to change the percentage on the **Parameters** tab of the **Insert Study** dialog.

How to code it

- Save the three-line Moving Average Simple you have created before under the name `movs3_percentage`. See Basing Your Study on an Existing Study on page 466.
- You should already be familiar with the source code of the study:

```
Function movs3_percentage
Returns Numeric;

Parameters
   Numeric Field source;
   Numeric period;
   Numeric shift;

Begin
   Result = Average(source, period) * (1 + shift /
   100);
   DrawLine("MovS_above", 1.1 * Result);
   DrawLine("MovS", Result);
   DrawLine("MovS_below", 0.9 * Result);
End.
```

- You want to establish and use a parameter in the program called *percentage*. As you know, you are not allowed to use a parameter without declaring it first. To do this, you have to edit the function header (or

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declaration section) of your program. Add a parameter named *percentage* of the type Numeric. Your parameters list should now read:

```
Parameters
   Numeric Field source;
   Numeric period;
   Numeric shift;
   Numeric percentage;
```

- We can now use this parameter in the program. We want to replace the part where we explicitly state the 10 percent value and instead use the parameter value. You now have to decide which values you expect the user to type into the parameter *percentage*. It would of course be most convenient if the user just types "20" if he wants 20 percent lines, and not "0.20", which is not very intuitive. So, you have to replace the hard-coded value 1.1 that you use now with a formula that can take the expected value of the parameter *percentage* (for example 20) and convert it to the value that the computer needs (for example 1.2):

```
DrawLine("movs_above", (1 + percentage / 100) * Result);
```

- You now do the same with the lower line:

```
DrawLine("movs_below", (1 - percentage / 100) * Result);
```

- And this is it already for the source code changes. Check the syntax of your adapted code by clicking on **Check Syntax** and save the new study.
- Now we should set some default values for the new parameter. In the **Study Editor**, go to the **Parameters** tab of your study. You should see your new parameter *percentage* there. Enter 10 as the default value, 0 as the lower limit and 100 as the upper limit. You can also enter a description for the parameter.
- Save your study again. Now you can try to insert it on a chart. Try different settings of your new parameter on the **Parameters** tab of the **Insert Study** dialog and see how it affects the results!

Note If you want some further practice on creating parameters for a study, you could take another go at the Commodity Channel Index (Changing the Formula of a Study (Commodity Channel Index) on page 468): Try if you can change the program so that you can define the constant factor (which was 0.015 originally, then changed to 0.020 in the code) as a parameter, so that you can change it more easily later on.

Language Reference

The TeleTrader Language is the basis for all studies (indicators and signals) inside TeleTrader Professional. It is a simple programming language that allows you to create custom studies and other technical analysis tools.

This section is intended to be used as a resource for you when you are unsure about the usage or syntax of some part of the TeleTrader Language. It will explain the syntax of the language, and give examples to show how it is used. However, if you have never used a programming language before, you should first read the section about Creating Custom Studies on page 460 to get familiar with some basic concepts of the language.

You will first get an overview of how programs written in the TeleTrader Language are executed. In this part, you will learn that you only have to write your program with one bar of the time series in mind, but that you can use all available values from the time series in your calculations.

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Then, you will get to know the different parts of a TeleTrader program:

- The *declaration section*, where you define what inputs your program takes and what outputs it produces, and where you also define the names of all variables used later
- The *execution section*, where the actual calculations are done and the results of your program are returned or plotted on the screen

At last, you will find a complete function reference that documents all built-in functions of the TeleTrader Language with their parameters and outputs.

Note To add comments into the source code, enclose the text in braces:

```
{ This is a comment }
```

Program Execution

All programs written in the TeleTrader Language can only be executed from within TeleTrader Professional and can only be inserted in chart documents and price pages. Usually, your program will produce a result that is drawn on the chart, like an indicator or a signal marker. In price pages, the latest result value of such an indicator or signal can be shown in a study column. In some cases, your program might only produce an output that can be used by other programs (like a special sort of calculation).

When you finish writing your program, you most likely want to run it in Professional:

- If your program produces a result that is drawn on the screen, apply the study to a chart document or price page with the **Insert Study** dialog.
- If your program produces a result that can be used by other programs, call them from within another program to use it. You can then plot the results on the screen:

```
Result = MyCalculation(source, period);
DrawLine("MyIndicator", Result);
```

Calculate Values for One Bar - Get Results for All Bars

When you write a custom indicator or signal with the TeleTrader Language, you will most likely want to plot the results of your program on a chart in Professional. As you know, each chart displays at least one time series – this can for example be a security. We will assume that the time series is indeed a security, such as a stock, although it could also be something else, like another study.

The term "time series" means that for each point in time, for example for each day on a daily chart, you have a set of values (for a stock, these are usually the *Open*, *High*, *Low* and *Close* prices) that are normally displayed as bars or candles. When you write a program that plots for example the Moving Average, you want to draw a line on the chart that changes direction with every new bar. That means that there has to be a value for your line for each bar that is shown on the screen.

Fortunately, you do not have to worry about this at all. You only have to tell Professional how it can calculate a value for one single bar. For example, in this example of the execution section for the Moving Average you can see that there is only one line used to calculate a single value for the variable `Result`:

```
Begin
   Result = Sum(source, period) / period;
   DrawLine("movs", Result);
End.
```

When the program is run, TeleTrader Professional automatically repeats the calculations in the execution section for each bar on the chart. In the end, it has a whole series of values that it then can plot as a line on the screen that spans the whole chart.

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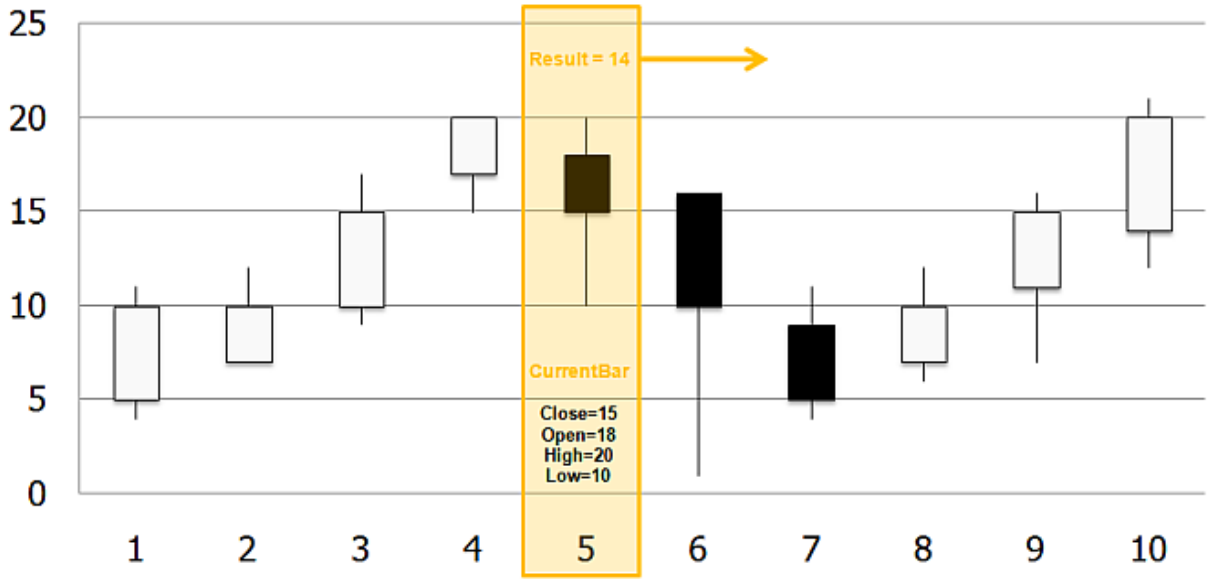
So, when you write a program, you only have to concentrate on calculating your result for one single bar, and TeleTrader Professional does the rest for you when you execute your program.

Example

When you use a study, Professional looks at the source code and runs the execution section once for each bar, starting from the first bar on the left. It only concentrates on one bar at a time and uses the values available for this bar (the current bar) for its calculations, if you don't specify otherwise.



You can also use values of past and future bars in your calculations – how you can do this is explained in the next section, Accessing the Time Series.

Accessing the Time Series

When you write a program, you tell it how to calculate a value for one bar, and TeleTrader Professional then performs this calculation for each bar of the time series that is visible on the chart. For almost all indicators or signals, these calculations are based on one or more of the values of a time series. For example, you could write a study that takes into account the *Open* and *Close* prices of a security.

To access a time series, you have to first define it. In the TeleTrader Language, you do this with a special kind of input parameter that is called a "base" in the **Insert Study** dialog. This parameter is normally called `source` (or similar) and is of the type `Field` or `Security`. You can have more than one base: The study *Crush Spread*, for example, needs three bases.

The available length of the time series is determined by the time region that you have defined for the chart where the study is inserted. For example, if you insert a study in a chart that show only one day of Intraday data, you only have access to the time series of this day. For studies that are inserted in price pages, the length of the time series can be defined in the properties of the inserted study. Per default, an appropriate setting is chosen automatically for each study (often depending on the currently set study parameters such as the *period* of a Moving Average). If you do not get the appropriate results for your study in the price page, you can change this setting by selecting **Use custom time region** on the **Parameters** tab of the study and entering the appropriate amount of bars.

Once you have defined your base, you can then use it in your program:

- For bases of the type `Field`, use the name of the time series, for example `source`. The program will use the field value that is defined in the **Insert Study** dialog, for example the *Close* price.
- For bases of the type `Security`, use the name of the time series plus the name of the field (element) that you want to use, for example `source.Close` or `source.Open`. If you use just `source`, the *Close* price will be used automatically.

For calculations including a time series or base, you will normally use the value of the current bar (the bar that the program is executed for at the moment), but you can also use the values of past bars and future bars.

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Current Bar

For simple programs, most of the times you only need to know the value of the current bar to calculate your result. When you refer to the current bar, you can do this by just using the name of your parameter, like `source`, or by writing `source[0]`, which means the same. For parameters of the type `Security`, you can for example write `source[0].Close`.

Past Bars

When you start to write more complex programs, you can make use of the fact that the whole time series is available to you. This means that you can use the values of the bars near your current bar and take them into account for your calculations.

As was already mentioned, the current bar (for example, today's bar) is represented by `source[0]`. If you want to use a value from yesterday's bar (that is, the next bar to the left), you can refer to this bar with `source[1]`. For bars even further in the past, use `source[2]`, `source[3]` etc. For parameters of the type `Security`, you can for example write `source[1].Open`.

Keep in mind that for the very first bars of your time series, no past values might be available.

Future Bars

You can also use values from bars that are to the right of your current bar with `source[-1]`, `source[-2]` and so on. As these bars are "in the future", there is a natural limit for using these kinds of calculations – when the study reaches the latest bar of the time series, no values for future bars are available yet, and you might get invalid results for this bar (which means that the study is not drawn for these bars).

Example

The function `Sum` uses a number of past elements of the time series `source` and sums them up. This example uses a `For` loop and accesses each element one by one with `source`[i], where the variable `i` is a changing value from zero to the value of `period`. As `source[0]` equals the current bar, and `source[1]`, `source[2]` … up to `source[period]` equal past bars, the end result is the sum of all the last `period` bars (for example, the last 5 bars when `period` is set to 5).

```
Function Sum
Returns Numeric;

Parameters
   Numeric Field source;
   Numeric period;

Variables
   Numeric i;

Begin
   Result = 0;
   For i=0 To period
          Result = Result + source[i];
End.
```

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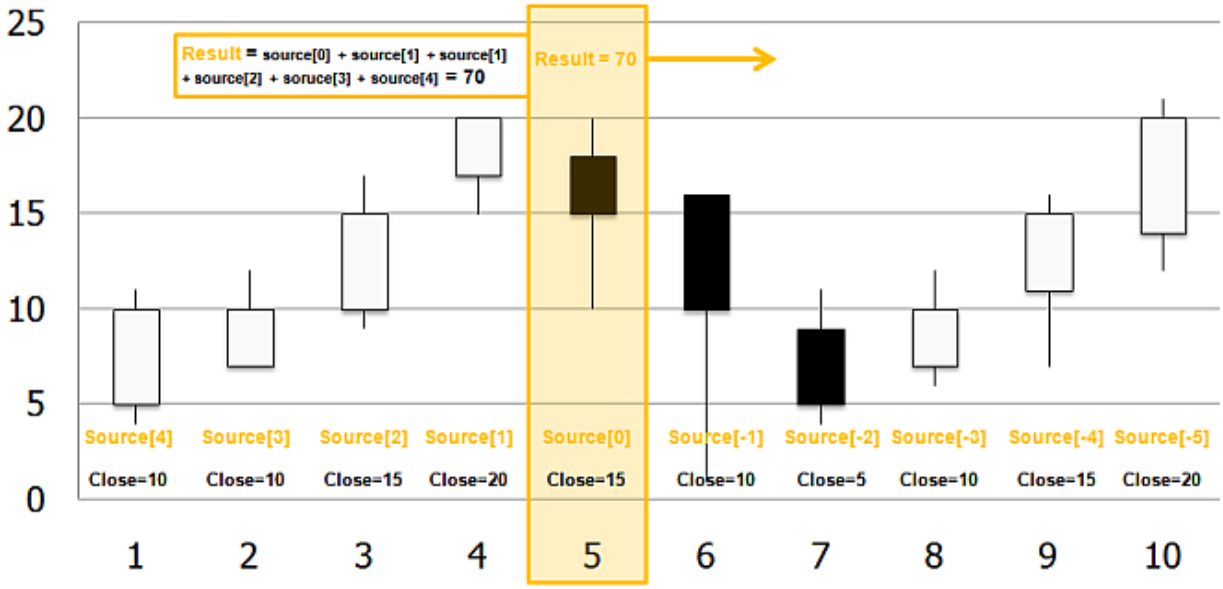
Consider what happens when for example the result for the fifth bar is calculated. The program first takes the current bar `source[0]` and then repeats the `For` loop. The value of `i` thus changes to `1`, and the program gets the value for yesterday's bar `source[1]` and adds it to the result. This is repeated until all bars are summed up.



Accessing the History of Variables and Results

You already know that TeleTrader Professional executes your program many times, once for every bar. It starts with calculating a result for the oldest bar of your time series (that means, the leftmost bar on the chart) and then repeats the program for every bar that is visible, until it reaches the latest bar.

In your program, you can use variables to store some data that you have calculated (you can find more on variables in the section Variables on page 482). When your program is executed for the first bar, Professional calculates a value for this variable. Then, the program is repeated for the next bar, and again a new value for your variable is calculated. Professional of course also does this for the special variable `Result`, that is included in every program and stores the end result of your study for the current bar.

You can use this concept to your advantage when writing a program: In some cases, you might want to take the result of a previous calculation and use it in your program. After all, these values have already been calculated by the computer, and it would be a waste of system resources to calculate them anew.

To access the last value of any variable, or of the special variable `Result`, you refer to it with `VariableName[1]` or `Result[1]`. To access values that are even further in the past, use `VariableName[2]` or `Result[2]` and so on.

> **Note** For all variables and results, you can only access values that are in the past, because future values are not calculated yet.

When you use past results, you have to take into account what will happen when the program is executed for the first time and there are no past results yet that you can use. For these cases, the built-in function `CurrentBar` is available. It returns the index number of the bar that the program is executed for at the moment, and you can use it to find out how many bars (and results) have been calculated already.

> **Note** For performance reasons, history for a variable is only created when it is accessed at some point in the program. For example, a variable `myVar` that is never used with square brackets behind it will have no stored history. If you need to force history for this variable, refer to it with `myVar[0]` when you first assign a value to it (`[0]` indicates the current value of the variable). History will then be stored for `myVar`. This is only recommended in special cases, such as when you need to use `myVar` in a `Crosses` expression (see Expressions on page 498).

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Example

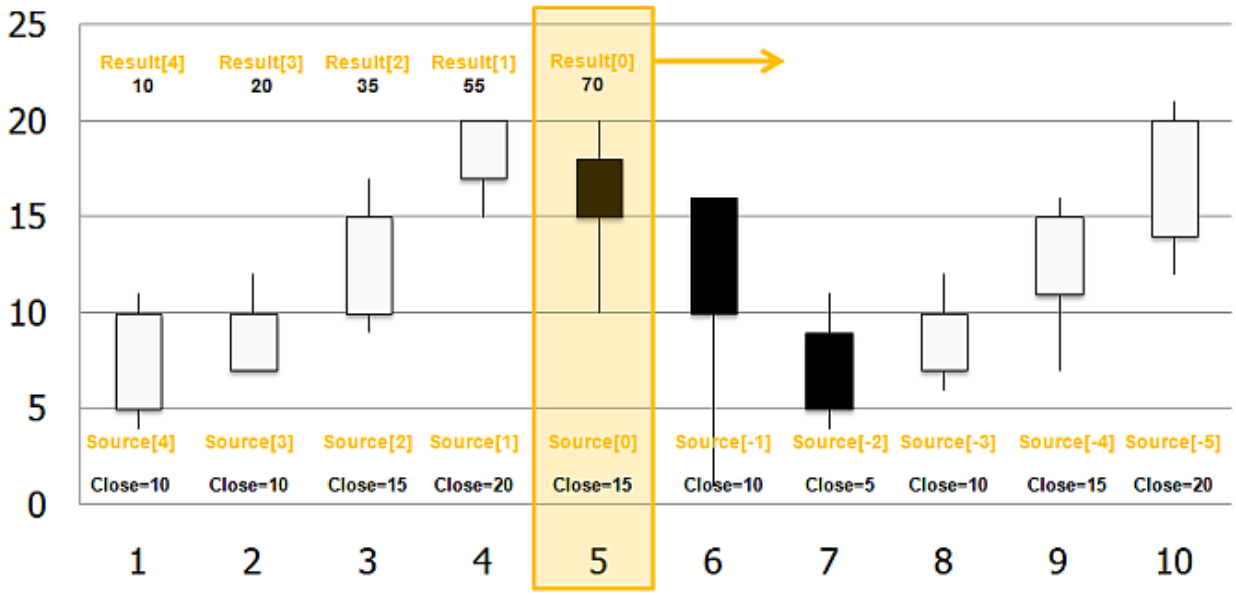
The function *Sum* was already introduced to illustrate how to access past elements of a time series and sum them up. Here, it is rewritten to illustrate how to use past results for the same calculations. It first uses an `If` condition statement to find out whether the program is executed for the first time: In this case, that is for the first bar, it does not rely on any past results. In the other cases, it uses the last calculated result `Result[1]` and adds it to the current result.

```
Function Sum
Returns Numeric;

Parameters
   Numeric Field source;
   Numeric period;

Begin
   If CurrentBar = 1 Then
          Result = source[0]
   Else If CurrentBar < period Then
          Result = Result[1] + source[0]
   Else
          Result = Result[1] + source[0] - source[period];
End.
```

When for example the program is executed for the fifth bar (assuming that the parameter period is set to some value greater than 5), the result for this bar is calculated by taking the result for the last bar and adding the *Close* price of the current bar.



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Recommended Best Practices

As soon as you start writing you own code, you will come across situations where there are two or more ways to solve a problem or calculate a certain result. In the following section, we want to give you a few recommendations as to what approach usually works better in our experience.

Avoid creating history for items where it is not necessary

The performance of a study depends on its memory consumption (among other things). The more values that have to be remembered, the slower the study will react when inserting it to a new chart or price page, changing the compression of a chart etc. As you have already learnt, you can access the history of every variable and even of already performed calculations. However, the TeleTrader Language does not automatically create a history for all items, only for those where the history is needed and used in the program. Thus, whenever you access the history of a variable, result, expression or calculation, you are actually creating this history. Creating a history for an item means adding a lot of data to the memory that has to be stored (temporarily). To optimize the performance of your studies, you should use this feature reluctantly. Often, it can be avoided to create additional history for an item, while still getting the same results.

Consider the following examples:

```
x = Sum(Source, period)[2]                                    {AVOID}
```

This line will sum up the given values of a security *Source* for the period specified. It repeats this for every bar of the time series. Then, it assigns the value that was calculated two bars ago to the variable *x*. In order to do this, all results of the *Sum* function (its history) have to be stored in the memory. For charts with a lot of visible bars (more than 100.000 bars), this is a lot of data that has to be stored. Therefore, the performance of the study could suffer.

To avoid creating a history for *Sum*, you could get the same result by using the following line:

```
x = Sum(Source[2], period)                                    {USE}
```

As the security *Source* always has a history, this would not add any data to the memory, and so the performance of the study will be much better. You are using a simple *Sum* operation, only on displaced data (*Source[2]*) – instead of doing a *Sum* operation, storing all its data and then taking the results out of the history of the *Sum* results.

History is not only created when you explicitly address it – some ways of calling a function also create a history for it. The following line shows the *Sum* function that is used on an expression:

```
y = Sum(Source.Close - Source.Low, period)                    {AVOID}
```

In order to be able to calculate the sum of the given array of values, for every bar in the time series the result of the expression *Source.Close - Source.Low* has to be stored in the memory. This creates unnecessary history for this expression – you could get the same results by instead changing your program to include the following line:

```
y = Sum(Source.Close, period) - Sum(Source.Low, period)       {USE}
```

Here, no additional history has to be created and stored, which will vastly improve the performance of your study.

The *Sum* function is performed twice now, but the overall number of operations has not increased much: Before, the expression *Source.Close - Source.Low* had to be calculated *period* times, and the results had to be added *period* times to form the sum (2 x *period* operations). Now, the Close and Low values have to be summed up (2 x *period* operations), and one additional subtraction takes place. This means a huge benefit at the expense of just one additional operation.

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Define a proper time region for price pages

If you want to use your custom studies in price pages, you should always define a value for the **Time region for price pages** setting. You can find this setting on the **Parameters** tab of the **Study Editor** (bottom right of the dialog). In this field, you can either enter a constant value (number of bars), or an expression that is derived from the study's parameters. For example, for the *Moving Average Displaced*, the appropriate expression is `period+period_dis`. You can also use some TeleTrader Language functions (such as *min* / *max*) in your expressions. If you don't define a value here, the default value of 100 bars will be used in price pages.

You should take some time to define a proper time region for your study, ideally one that depends on the study's parameters (if applicable). Keep in mind that if you add too little history, the study might not be calculated (leading to an empty value in the study column). On the other hand, if you add too much history per default, this can affect performance, since the history must be downloaded for every symbol in the price page.

Declaration Section

In the declaration section of your program, you have to define:

- The name of your program (function title)
- The output that your program will create (return type)
- The input that your program requires (parameters)
- The names and types of variables that can be used in the program (variables)
- Custom parameter and variable types that you want to use in the program (enumerations)
- Requests for specific (hard-coded) time-series data that is to be used in the program (symbols)

The different elements of the declaration section have to be stated in a fixed order:

- Function title
- Return type
- Enumerations (optional)
- Parameters
- Symbols (optional)
- Variables (optional)

Function Title

You have to define a name for your program. With this name, you can later also call it from inside other programs.

This section is mandatory.

Syntax

```
Function FunctionName
```

`Function`	Reserved word
`FunctionName`	Choose a name for your program (see Naming Conventions on page 486)

When calling a function (program), you have to spell its name exactly the same as in its definition.

Example

Create a program with the name `MyIndicator`:

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```
Function MyIndicator
```

Return Type

You have to define what kind of value is returned by your program (if any).

The return types `Numeric`, `Text` and `Boolean` are used for programs which calculate results and use the special variable `Result` at some point to store the end result of the calculations. The return type must then match the value that you calculate. This means that in most cases you have to define the return type as `Numeric`, as most calculations for your custom studies will do numeric calculations. The returned value can then also be used by other programs.

If your program does not make use of the variable `Result`, for example because it only draws something on the screen, you can use `Nothing` as your return type.

This section is mandatory.

Syntax

```
Returns ReturnType;
```

`Returns`	Reserved word	
`ReturnType`	Possible return types are:	
	`Numeric`	Program returns a number
	`Text`	Program returns text
	`Boolean`	Program returns the logical value `True` or `False`
	`Nothing`	Program returns nothing

Example

If the end result of the program is a numeric value:

```
Returns Numeric;
```

Parameters

The parameters section is used to define input values that will be needed throughout the program. These values have to be passed to the program before it is executed, which also means that you can change these values every time you use your program. The more parameters a program has, the more flexible it is, because it is able to work with different input data.

For studies, parameters are normally passed to the program on the **Parameters** tab of the **Insert Study** dialog in TeleTrader Professional. You can change the values for each parameter there and so make the program work with different input data. This makes it possible that one study, as for example the Moving Average, can be calculated for any security and with any given period. If a program would not use parameters, you could for example not apply it to another time series (security).

For other programs, you have to pass the parameters manually when you call the program. For example, if you use the built-in function *Sum*, you have to provide two values for its two parameters – what items should be summed up, and how many of these items should be summed up. Therefore, you call the program e.g. with *Sum*(*source*, *period*).

There are three basic types of parameters: *Value*, *Field* and *Security*.

- *Value* parameters show up in the **Parameter** section on the **Parameters** tab and are used for single values, such as the *period* parameter of the Moving Average.

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- *Field* parameters show up in the **Bases** section on the **Parameters** tab and are used for specific elements of a security, for example the *Open* or *Close* price. You can choose the base element that is used in the study in the **Insert Study** dialog, and you can then only use this element (e.g. *Close* price) in your program.
- *Security* parameters also show up in the **Bases** section on the **Parameters** tab. In contrast to the *Field* parameters, they contain all elements of a security. In your program, you can choose which elements you use for a calculation by writing for example `source.Close` or `source.Open`.

The *Value* and *Field* parameters must have an additional parameter type that defines what kind of value the parameter holds. This additional type can be `Numeric`, `Text` or `Boolean`.

Note For your custom studies, you will in most cases need at least one parameter `source` that defines the base for your study. This parameter can be of the type `Security` or of the type `Field`. All parameters of this type will show up in the **Bases** section of the **Parameters** tab.

This section is mandatory.

Syntax

```
Parameters
   ParameterType ParameterName1;
   ParameterType ParameterName2;
   ...
```

`Parameters`	Reserved word. You can also use `Params` instead.
`ParameterType`	Possible parameter types are: For *Value* parameters: `Numeric` Input value is a number `Text` Input value is text `Boolean` Input value is the logical value `True` or `False` For *Field* parameters: `Numeric Field` Input is a security (base) field with a number value `Text Field` Input is a security (base) field with a text value `Boolean Field` Input is a security (base) field with a logical value For *Security* parameters: `Security` Input is a security (base) with all its properties You can also define custom types by using enumerations: See Enumerations on page 483.
`ParameterName`	Choose a name for your parameter (see Naming Conventions on page 486)

Example

Define two parameters for the Moving Average: The price of the underlying security and the period of bars for which the average should be calculated.

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```
Parameters
   Numeric Field source;
   Numeric period;
```

Variables

The variables section is used to define values that you will use somewhere in the program. Typically you use variables to temporarily store information that you will need again later.

Unlike parameters, variables are not automatically given a value when you start the program. Therefore, if you define variables, you will have to remember to assign an initial value to them. You can either do this when defining them, or in the execution section of your program. If you forget to assign a value to a variable and later try to use it in a calculation, the result of the calculation will be invalid.

There is a special variable `Result`, which holds the return value for each program. This variable is created automatically in every program, and you do not have to define it in the variables section. The type of the `Result` variable (`Numeric`, `Boolean` or `Text`) is defined by the return type of the program.

This section is optional. If used, it has to be positioned at the end of the declaration section

Syntax

```
Variables
   VariableType VariableName1;
   VariableType VariableName2(InitialValue);
   VariableType VaraibleName3 = InitialValue;
   ...
```

`Variables`	Reserved word. You can also use `Variable` or `Var` instead.
`VariableType`	Possible variable types are: `Numeric` Variable value is a number `Text` Variable value is text `Boolean` Variable value is the logical value `True` or `False` You can also define custom types by using enumerations: See Enumerations on page 483.
`VariableName`	Choose a name for your variable (see Naming Conventions on page 486)
`InitialValue`	Set an initial value for the variable. There are two ways to initialize a variable in the declaration section – choose the one which you like best. This is an optional part of the variable declaration – you can also assign a value to the variable later in the execution section of your program (see Value Assignment on page 488 for details).

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Example

Define two variables that will hold the results of a calculation. You can later reuse these results in the same program.

```
Variables
   Numeric diffHigh;
   Numeric diffLow;
```

Define two variables and initialize them in the declaration section (note that both ways shown below are equally valid):

```
Variables
   Numeric Counter1(0);
   Numeric Counter2 = 0;
```

Enumerations

The enumerations section can be used to define your own parameter or variable types, in addition to the built-in types (`Numeric`, `Text`, `Boolean` etc.). After defining a new enumeration type, you can use it immediately to declare parameters or variables of this type in the same program. In contrast to the built-in types, an enumeration type always comes with a specific set of named values. Only these values can later be assigned to a parameter or variable of this type.

You could for example create an enumeration type called `Color` with the values `Red`, `Green` and `Blue`. If you now declare a variable `MyColor` of this type, you can only use the defined values (that means, if you assign for example the color `Yellow` to your variable, this will create a syntax error). If you declare a parameter of the type `Color`, the three possible color values will be available as a list in the **Parameter** section of the **Parameters** tab.

Enumerations are therefore especially useful if you want to make sure that only a few pre-defined values can be assigned to a parameter or variable. This also makes them very helpful when using `Case` statements (see Case Conditions on page 492).

This section is optional. If used, it has to be positioned above the parameters section.

Syntax

```
Enums
   EnumName1 = (EnumValue, EnumValue, ...);
   EnumName2 = (EnumValue, EnumValue, ...);
   ...
```

`Enums`	Reserved word. You can also use `Enum` instead
`EnumName`	Choose a name for the enumeration type (for example `Mode`, `Color` etc. – see Naming Conventions on page 486).
`EnumValue`	Define the possible values (enumerators) for this enumeration type. Only these values can be used for parameters or variables of this type.

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Example

By using enumerators, you can make it more intuitive for the users of a study to choose relevant values for certain parameters. In the following example, you can see an enumeration type called `Mode` that is used for declaring the parameter *multiply*. In the **Insert Study** dialog, the user will be able to assign the value **Normal**, **Twice** or **Half** to this parameter. Depending on what he chooses, the example indicator will show the double or half *Close* prices of the base security as a line.

```
Function EnumerationExample
Returns Nothing;

Enum Mode = (Normal, Twice, Half);

Parameters
   Security Source;
   Mode multiply;

Variable
   Numeric price;

Begin

   If (multiply = Twice) Then
          price = Source * 2
   Else If (multiply = Half) Then
          price = Source / 2
   Else
          price = Source;

   DrawLine("SampleLine", price);

End.
```

Symbols

The symbols section should be used to request time series data for specific symbols (securities, indices etc.). This is useful if you need certain time series data in your study (for example a specific currency pair, advance / decline data or similar data) in addition to the symbol that is already present on the chart or in the price page.

Note In TeleTrader Professional, all stocks, futures, options, indices and other securities are called symbols. A symbol is the unique identification given to every security that is traded on an exchange or over-the-counter market.

As you already know, you can access the time series of a symbol by using it as a *base* in your study (see Accessing the Time Series on page 474). A base is a special kind of input parameter of the type `Security` or `Field` (see Parameters on page 480). When inserting a study in a chart, the symbol / time series that is visible on the chart usually becomes the base for the study. You can of course manually change the base in the **Insert Study** dialog if necessary.

Yet there are some studies (for example Market Breadth indicators) that make use of additional data that might or might not be present on the chart (for example advance / decline data). You can of course write a study with several bases (parameters), and let the user choose the appropriate advance / decline symbols each time he inserts the study. However, in some cases it might be easier to just integrate these symbols once into the source code of the study itself.

As you cannot define a variable to hold time series data (variables can only hold numbers, text or Boolean values) , and you don't want to use a parameter (as described above), you have to use the symbols section to map a time series to an internal identifier (symbol name). Once you have chosen a symbol name, you immediately assign the time series by using its symbol ID (for example `{1947579}`) or unique name (for example `AT0000720008#CM_VIE`).

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There are several methods to do this, which are explained in more detail below. You can then use the symbol in your program like you would use a parameter of the type `Security`. That means that you can for example access its individual elements (*Open*, *High*, *Low, Close* prices, *Volume* etc.), address past / future bars of the time series, use it as an input for drawing functions etc. The only difference between a symbol defined in this way and a `Security` parameter is that the symbol is hard-coded (and can therefore only be changed in the source code of a study), whereas a `Security` parameter is variable (and can be changed in the **Bases** section of the **Insert Study** dialog).

This section is optional. If used, it has to be positioned immediately after the parameters section.

Syntax

```
Symbols
   SymbolName = "SymbolID";

{ Using Case statements for symbol assignment }
   SymbolName = Case EnumTypeParameter Of
                        ParameterValue1: "SymbolID";
                        ParameterValue2: "SymbolID";
                        ...
                End;

{ Declaring more than one symbol at once }
   SymbolName1, SymbolName2 = "SymbolID", "SymbolID";

{ Mixing direct assignment and Case statements }
   SymbolName1, SymbolName2, SymbolName3, SymbolName4 =
                "SymbolID",
                Case EnumTypeParameter Of
                        ParameterValue1: "SymbolID", "SymbolID";
                        ParameterValue2: "SymbolID", "SymbolID";
                        ...
                End,
                "SymbolID";
```

`Symbols`	Reserved word
`SymbolName`	Choose a name for the symbol (for example *DowJones*, *EURUSD*, *Stock1* etc. – see Naming Conventions on page 486).
`SymbolID`	Internal identification of the time series (index, security etc.). You can either use the symbol identification number (for example `{1947579}`) or its unique name (for example `AT0000720008#CM_VIE`). The ID or unique name has to be enclosed in quotes. To find out the identification of a symbol in TeleTrader Professional, click in the row of the symbol in a price page and press F2. Identification number and unique name can also be displayed in the price page columns **TID** and **TUN**.
`EnumTypeParameter`	Name of a parameter (of an enumeration type, see Enumerations on page 483) that controls which time series is assigned to the symbol (using a `Case` statement, see Case Conditions on page 492). Use this method if you want to use one out of a group of (hard-coded) symbols in your study, depending on the controlling parameter. You can easily change the parameter value in the **Insert Study** dialog without having to change the source code of the study. Further below you find an example using this method (including the necessary `Enums` and `Parameter` declarations).
`ParameterValue1` `ParameterValue2`	Possible values of the controlling parameter. Depending on the parameter value that is chosen in the **Insert Study** dialog when using the study, the corresponding symbol will be assigned.

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Example

In the following example, you can see the declaration of three symbols (*src1* to *src3*). The first symbol is assigned a fixed value (the symbol ID {1947579}, which stands for the Google stock). The other two symbols are defined depending on the value of the *exchg* parameter, using a Case statement: If *exchg* is for example set to DAX in the **Insert Study** dialog, the two symbols will be set to the IDs {458757} and {458808}. In the NASDAQ case you can see how to use unique names instead of symbol IDs. The parameter *exchg* is defined with the enumeration type Exchange, which is defined in the Enum section.

This sample study draws the *Close* prices of the chosen symbols on the chart. Note that the usage of Symbols (*src1* to *src3*) is comparable to that of a parameters of the type Security (*Source*).

```
Function SymbolExample
Returns Nothing;

Enum Exchange = (ATX, DAX, NASDAQ);

Parameters
   Security Source;
   Exchange exchg;

Symbols
   src1 = "{1947579}";
   src2, src3 = Case exchg Of
                        ATX: "{399915}", "{399895}";
                        DAX: "{458757}", "{458808}";
                        NASDAQ: "MSFT_0FSPC", "AAPL_0FSPC";
                        End;

Begin
   DrawLine("Variable_Security_From_Parameters", Source.Close);
   DrawLine("First_Symbol_Is_Fixed", src1.Close);
   DrawLine("Second_Symbol_Depends_On_Exchange", src2.Close);
   DrawLine("Third_Symbol_Depends_On_Exchange", src3.Close);
End.
```

Naming Conventions

When you choose a name for a program, parameter or variable, you have to conform to some simple rules:

- The name can only use letters, numbers or the underscore sign (_)
- The name must start with a letter
- You are not allowed to use one of the reserved words as a name (see list below)

Reserved Words (Keywords)

Every programming language uses some reserved words. These words have a special meaning in the language, which means that you are not allowed to use them as a name for your own variables, parameters or programs.

In the TeleTrader Language, the following words are reserved (in alphabetic order):

Above

And

Begin

Below

Boolean

Case

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```
Close
Crosses
Div
Do
Downto
Else
End
Enum
Enums
False
Field
For
Function
Greater
High
If
Iff
Less
Low
Mod
NoDraw
NoPlot
Not
Nothing
Numeric
Of
OI
Open
OpenInterest
Or
Over
Parameters
Params
Repeat
Result
Returns
Security
Symbols
Text
Then
```

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To

True

Under

Until

Var

Variable

Variables

Vol

Volume

While

Xor

Execution Section

Technically, the execution section contains a list of command statements enclosed between the words `Begin` and `End`. Each command statement is ended with a semicolon (`;`). At the end of the execution section, write a full stop (`.`).

```
Begin
   Statement1;
   Statement2;
   ...
End.
```

In the execution section you perform several calculations. To produce your end result, you have to perform a series of calculations in the command statements.

The command statements can be any of the following:

Value Assignment	Store a value inside a variable
Function Call	Use the results of other functions (programs) in your calculations
Condition	Control what statements are executed based on certain conditions
Loop	Repeat the execution of some statements for a fixed number of times or as long as a certain condition is valid

Command statements are executed in the exact order that they are written in the program. Some basic constructs can be used inside the command statements, these are:

Block Statements	Combine several single statements into one
Expressions	Calculate a numeric or Boolean value

When you have calculated your end result, you can then do two things with it:

- Plot the result on the screen. You do this with the drawing functions. See Drawing Functions on page 502.
- Put the result into the variable `Result`. You can then use it again in other programs. See Value Assignment on page 488.

Value Assignment

You can assign a value to each variable that you have previously defined in the declaration section of your program. You can also assign a value to the special variable `Result`, which is created automatically for every program.

A value assignment consists of two parts:

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- The *name* of the variable that you want to store the value in
- The *expression* that calculates the value that you want to store

What kind of expression you use depends on the type of variable. That means that you can only use numeric expressions to assign values to a numeric variable, and Boolean expressions to assign values to Boolean variables. This is because the result of a numeric expression is always a number, and only numeric variables can store numbers. Likewise, only Boolean variables can store the logical values `True` or `False` that are the result of Boolean expressions.

Expressions can contain numbers (constants), other variables, parameters, functions and operators. For details about formulating expressions see:

- Numeric Expressions on page 498
- Boolean Expressions on page 499

To assign a text value to a `Text` variable, just put quotes around the text. You can also append numeric data to a text variable by using the + operator.

Syntax

```
Variable = Expression;
```

`Variable`	Name of the variable that you want to assign a value to
`Expression`	Expression that calculates a value that you want to store

Examples

Assign a simple value to a `Numeric` variable:

```
NumOfMonths = 12;
```

Assign a calculated value to the `Result` variable (make sure that the correct return type was defined in the declaration section, in this case `Numeric`):

```
Result = adiffHtCy - 0.5 * adiffLtCy + 0.25 * adiffCy;
```

Assign a value to a `Boolean` variable:

```
IsReady = largest >= 0 And limitMove <> 0;
```

Assign a text value to a `Text` variable, and append data from a numeric variable there:

```
DisplayedText = "You are visitor number " + VisitorNo;
```

Function Call

You can call up other functions (helper programs) from within your custom study. A function can be a built-in helper program that performs a certain task, or any program that is visible in the TeleTrader Professional interface. For built-in functions, you cannot see or change the source code – all other functions can be displayed in the **Study Editor**.

You can use the results of a function in your own calculations, or make the other function draw your own results on the screen, or both. The TeleTrader Language includes some basic functions that you can use for such operations as summing up values or drawing a line on the screen. Using functions can be very convenient, as you do not have to

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write all the code that it includes yourself, and can re-use them several times. You can also use programs you have written yourself as a function, when you call it from inside another program.

When you call a function that returns a value, you will usually use it as part of an expression. This means, you use the value that is returned by the function for some calculation, assign its value to a variable or use it as part of a condition.

When you call a function that draws your results on the screen, you usually use it on its own, that means the function call makes up the complete command statement on this line.

To call up a function, you have to know what inputs it expects. In the same way as you define parameters for your own programs, all other functions also expect one or more parameters as an input. The list of parameters that you supply must match the type of parameters that are needed by the function – if the function needs a numeric input, you cannot call it up with a text input, for example.

Similarly, you have to be aware of the kind of output that a function returns. Some functions might return a numeric value, that you can use in your calculations; some functions return a logical value, that you can e.g. use inside a condition; some functions return nothing, but perform an action, such as drawing something on the screen.

Note You can also apply functions only to specific bars. The syntax is similar to that of addressing past and future bars (see Accessing the Time Series on page 474). For example, you can draw a marker at the Close of the bar before the current bar by using `DrawMarker[1]("Marker1", Source.Close, True, "PastBar")`.

You can find all built-in functions, their expected parameters and outputs in the Function Reference on page 501.

Syntax

```
FunctionName(Parameter1, Parameter2, ...)
```

`FunctionName`	Name of the function that you want to call up. Some functions both calculate and return a result and draw that result on the screen. If you only need the calculated results of such a function, add a pound sign `#`, `NoPlot` or `NoDraw` in front of its name, for example `#movs`.
`Parameter1` `Parameter2`	Parameters that you pass to the function. These can be fixed values, parameters or variables of your own program, expressions, or even other function calls.

Examples

Draw an area between two values:

```
DrawArea("Area", middleBand1, middleBand2);
```

Get a value from the function `Sum` and store it in the variable `middleBand`:

```
middleBand = Sum(source, 50);
```

Use the output of a function as a condition in an `If` statement, then draw a line with a second function that takes the result of a third function as an input parameter:

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```
If IsValid(Source.High) Then
   DrawLine("PDI", pdi(Source, period));
```

If Conditions

To control what part of your program is executed under certain conditions, you use the `If` statement. For example, you only want your program to draw a line on the screen if the calculated line for your result is above a certain level; otherwise, you want to do some additional calculations before the line is drawn.

The crucial part of an `If` statement is usually the condition that decides when one or the other statement is executed. You should put some thought into your condition and test it thoroughly in order to avoid unexpected results. A condition is an ordinary Boolean expression that gives you a value of either `True` or `False`.

Tip `If` statements are sometimes also used to make sure that all values needed for some calculation are actually available and valid before you start the calculation; therefore, the function *IsValid* is often used as the condition.

An `If` statement consists of three parts, of which at least the first two must be provided:

- `If` + condition(s): The first part declares the condition(s) that have to be verified. Depending on the outcome of the calculation of the condition, which normally is a Boolean expression, different actions are carried out.
- `Then` + statement(s): This part is only executed when the condition is met, that is to say when the Boolean expression used in the `If` part is `True`.
- `Else` + statement(s): This part is only executed when the condition is not met, that is to say when the Boolean expression used in the `If` part is `False`.

You can skip the `Else` part if you do not need it, but you cannot skip the `Then` part.

Syntax

```
If Condition Then
   Statement1;
```

or

```
If Condition Then
   Statement1
Else
   Statement2;
```

`If`	Starts the `If` statement
`Condition`	Boolean expression that decides if the `Then` or `Else` block is executed
`Then`	Starts the `Then` execution block: This block is executed only if `Condition` is `True`. This part is mandatory.
`Statement1`	Any command statement or block statement that will be executed when the condition is met. Don't put a semicolon at the end of this statement if you want to add an `Else` block.
`Else`	Starts the `Else` execution block: This block is executed only if `Condition` is `False`. This part is optional.
`Statement2`	Any command statement or block statement that will be executed when the condition is not met

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You can concatenate several `If-Then-Else` statements, which means that you use another `If` statement in the `Else` part of the previous `If` statement:

```
If Condition1 Then
   Statement1
Else If Condition2 Then
          Statement2
          ...
     Else If ConditionN Then
                StatementN
           Else
                Statement0;
```

Examples

Checks if a value is valid before drawing a line using that value:

```
If IsValid(Source) Then
   DrawLine("ROC", roc(Source, period));
```

Concatenated `If` statements to sum up values similar to the `Sum` function:

```
If CurrentBar = 1 Then
   Result = source[0]
Else If CurrentBar < period Then
          Result = Result[1] + source[0]
     Else
          Result = Result[1] + source[0] - source[period];
```

Case Conditions

With a `Case` statement, you can control the flow of your program based on the values of certain parameters or variables. For example, you want to multiply the price of a security by two if the parameter `multiply` is set to `Twice`, but divide it by two if the parameter is set to `Half`.

Tip Enumeration types (see Enumerations on page 483) are especially useful for `Case` statements, as they limit the possible values that a variable or parameter can hold.

`Case` statements can almost always be substituted by several `If` statements. However, they usually offer a better overview of the different available options and their results.

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Syntax

```
Case VarOrParam Of
   Value1: Statement1;
   Value2, Value3, ...: Statement2;
   ...
Else
   Statement3
End;
```

`Case`	Starts the `Case` statement
`VarOrParam`	Name of the variable or parameter that should control the flow of the program.
`Of`	Reserved word

`Value1`
`Value2`
`Value3`
	Possible constant values of the controlling variable or parameter. You can use any type of value (enumerator, number, text, Boolean value).
	If you want to link a statement to more than one possible value, separate the values with a comma.

`Statement1` `Statement2`	Any command statement or block statement that should be executed when the controlling variable or parameter holds the corresponding value.
`Else`	Starts the `Else` execution block: This block is executed only if the controlling variable or parameter holds a value not listed in the `Case` statement part above. This part is optional.
`Statement3`	Any command statement or block statement that will be executed when no matching value is found in the above list. Don't put a semicolon at the end of this statement.
`End`	Ends the case statement.

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Examples

In the following example, the parameter *multiply* is used to control the output of the program: Depending on its value, the example indicator will show the triple, double or half *Close* prices of the base security as a line. To ensure that no other values than the ones used in the Case statement can be assigned to the parameter, the enumeration type Mode has been created for this parameter.

```
Function CaseExample
Returns Nothing;

Enum Mode = (Normal, Double, Triple, Half);

Parameters
   Security Source;
   Mode multiply;

Variable
   Numeric price;

Begin

   Case multiply Of
          Triple: price = Source * 3;
          Double: price = Source * 2;
          Half: price = Source / 2;
   Else
          price = Source
   End;

   DrawLine("SampleLine", price);

End.
```

The section on enumeration types shows a very similar example using If statements instead.

For Loops

With a For loop, you can execute a statement or block of statements for a specified number of times.

For this kind of loop, you need a numeric counter variable (that you of course have to define in the declaration section of your program). This variable tracks how often the loop was already executed. When you start the loop, you assign a starting value to this variable. The value of the variable is then automatically incremented by one (if you use the keyword To) or decremented by one (if you use Downto) each time the loop is executed.

Tip The counter variable is often called i or j.

When the value of the counter variable reaches the stop value that you define in the To or Downto part of the loop, the loop is broken and the program is executed from the next statement after the loop. To make sure that the counter value always reaches the stop value, use the keyword To when the stop value is higher than the start value, and use Downto when the stop value is lower than the start value.

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Syntax

```
For Variable = StartValue To StopValue Do
   Statement;
```

`For`	Starts the `For` loop
`Variable = StartValue`	Assigns a starting value to the counter variable
`To` (or `Downto`)	Starts the `To` control block that determines when the loop will end Use the keyword `Downto` instead it your stop value is lower than the start value
`StopValue`	Sets the stop value that must be reached by the counter variable to break the loop
`Do`	Starts the `Do` execution block that is executed several times until the stop value is reached
`Statement`	Any command statement or block statement that will be executed as long as the stop value is not met

Example

A hypothetical `For` loop that draws five identical Moving Averages on the screen:

```
For counter=0 To 5 Do
   DrawLine("MovS" + counter, Result);
```

You can also use the counter variable inside the loop – here it is used to determine which element is added to the result (during the execution of the loop, all elements up to the value of *period* will be added):

```
For i=0 To period Do
   Result = Result + source[i];
```

While Loops

With a `While` loop, you can execute a statement or block of statements as long as a certain condition is met.

For this kind of loop, you have to define a condition. This condition is an ordinary Boolean expression that should be `True` before you start the loop (otherwise, the loop will not be executed at all). You then provide a block of command statements that will be executed in the loop. Each time the loop is completed, the program will check if the condition is still met. If it is, the loop statements are executed once more. If the condition is no longer met, the loop is broken.

The crucial part of a `While` loop is its breaking condition. In your execution block, you have to add a line where you eventually allow the starting condition to become `False`. If you do not do this, the loop will never be broken and your program will probably hang. Usually, you use a counter variable that you increment or decrement to break out of the loop, but you can use any other condition of course.

Syntax

```
While Condition Do
   Statement;
```

`While`	Starts the `While` loop
`Condition`	Boolean expression that controls the loop: As long as it is `True`, the loop will continue.

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	When it becomes `False`, the loop is broken.
`Do`	Starts the `Do` execution block that is executed as long as the condition is `True`
`Statement`	Any command statement or block statement that will be executed as long as the loop condition is met. Most `While` loops use a block statement (`Begin` … `End` section), as you have to add statements to break the loop: You must provide a possibility for the condition to become `False`. Otherwise, your loop will never be broken and run indefinitely.

Example

This is a `While` loop that adds up all elements of *source* up to the value of *period*. Note that `i` is incremented inside the execution block, so that the starting condition `i < period` will eventually become `False` and end the loop.

```
i = 0;
While i < period Do
Begin
   Result = Result + source[i];
   i = i + 1;
End;
```

This is of course the same example as in the section on `For` loops, where we needed only two lines of code for the same effect. You can see that for a given problem, different loops could be used, but that some are more fitting for a problem and thus result in fewer lines of code.

Repeat Loops

With a `Repeat` loop, you can execute one or more statements as long as a certain condition is not met.

The `Repeat` loop is the opposite of the `While` loop. In the `While` loop, you stay in the loop as long as the starting condition is `True`. When it becomes `False`, you break the loop. In the `Repeat` loop, it is the other way round: You stay in the loop as long as the exit condition is `False`. When it becomes `True`, the loop is ended. This means that you can rewrite each `While` loop as a `Repeat` loop and vice versa, as long as you logically reverse the condition that you use to start (or stop) it.

The only other difference between these two loops is that a `Repeat` loop is executed at least once, even if the condition you use to stop it is `True` from the start. With a `While` loop, you can set the starting conditions so that the loop is not executed at all under certain circumstances.

Same as with `While` loops, you have to take care to provide a statement that can eventually break the `Repeat` loop, that means the breaking condition must become `True` at some point.

Syntax

```
Repeat
   Statement;
Until Condition;
```

`Repeat`	Starts the `Repeat` loop execution block that is executed at least once
`Statement`	Any command statements that will be executed once, and then as long as the loop condition is met.
`Until`	Starts the `Until` control block that determines when the loop will end
`Condition`	Boolean expression that controls the loop: As long as it is `False`, the loop will continue. When it becomes `True`, the loop is broken. Most `Repeat` loops use more than one command statement, as you have to add

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statements to break the loop: You must provide a possibility for the condition to become `True`. Otherwise, your loop will never be broken and run indefinitely. Note that for `Repeat` loops, you do not have to use `Begin ... End` if there is more than one command statement inside the loop.

Example

This is the same example as in the section on `While` loops. Note that the condition `i < period` has been reversed:

```
i = 0;
Repeat
   Result = Result + source[i];
   i = i + 1;
Until i >= period;
```

Block Statements

Usually, every command statement is written on a separate line and ended with a semicolon (`;`). Some kinds of statements, namely `If` conditions, `For` loops and `While` loops, require additional command statements that are used inside the condition or loop execution block. In many cases, you will want to perform more than one action inside a condition or loop execution block.

If you want to execute more than one command statement inside an `If` condition, `For` loop or `While` loop, you need to write a block statement.

Note You have probably noticed that the execution section as a whole is a block statement, too. In contrast to normal block statements, the execution section is ended with a full stop (`.`) though.

Syntax

```
Begin
   Statement1;
   Statement2;
   ...
   StatementN;
End;
```

`Begin`	Starts the block statement

`Statement1`
`Statement2`
`StatementN`
	Any single command statements that should be executed inside the block.
	Write them like you would do outside of the block. Every statement has to be ended with a semicolon (`;`).

`End`	Ends the block statement. You have to close the block statement with a semicolon (`;`).

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Example

For the calculation of the *Accumulation Swing Index*, block statements are used inside an `If` condition statement. You can see in this example that block statements can also be used inside of other block statements.

```
If IsValid(Source.Open) And IsValid(Source.High) And
IsValid(Source.Low) And IsValid(Source.Close) Then
   Begin
          swingIndex = #swing_index(Source, limitMove);
          If IsValid(swingIndex) Then
          Begin
                 If Not IsValid(sumResult[1]) Then
                        sumResult = swingIndex
                 Else
                        sumResult = sumResult[1] + swingIndex;
                 DrawLine("ASI", sumResult);
          End
          Else
                 sumResult = sumResult[1];
   End;
```

Expressions

Expressions calculate values that can then be used by other parts of your program. You can use expressions in the following places of the execution section of your program:

- *Value Assignment*: You can use numeric or Boolean expressions to calculate a value. This value is then stored in a variable.
- *Function Call*: You can use numeric or Boolean expressions to calculate an input value for a function.
- *Conditions*: In the `If` part of the statement, use a Boolean expression to decide whether the following statements will be executed.
- *Loops*: Use Boolean expressions for the starting and breaking conditions of `While` and `Repeat` loops.

There are two kinds of expressions, based on the type of results that they calculate:

- *Numeric expressions* have a number as their result
- *Boolean expressions* have a logical value as their result (true or false)

Expressions can be rather simple, like assigning a number to a variable, or quite complex. Complex expressions make use of other expressions. For example, many Boolean expressions make use of simple numeric expressions.

Additionally, you can also use *conditional expressions*. Those can return a numeric or Boolean value, depending on the values that you use inside the expression. Conditional expressions are similar to `If` statements, but in a condensed form.

Numeric expressions

A numeric expression returns a number as a result. As an input, it takes numbers, numeric parameters, numeric variables and function calls that return a number. To calculate a result, a numeric expression can contain the following operators:

+	Addition
-	Subtraction
*	Multiplication
/	Division (you can also use `Div` instead)
^	Power
%	Modulo (you can also use `Mod` instead)

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Note Please note that for rational numbers, the syntax of the TeleTrader Language requires the use of a *decimal point* in the source code (for example 0.5), while on the **Parameter** tab of the **Insert Study** dialog you might be expected to use a *decimal comma* (for example 0,5) – depending on the configuration of your operating system.

The simplest form of a numeric expression is the use of a fixed value, that means that no calculation takes place. For example, the following line assigns a simple numeric expression (a number) to the numeric variable `NumOfMonths`:

```
NumOfMonths = 12
```

In more complex expressions, you can use numbers (constants) or variables and parameters that represent numbers to calculate a result:

```
adiffHtCy - 0.5 * adiffLtCy + 0.25 * adiffCy
```

The values you use for a numeric calculation can also be calculated by another program:

```
funcMove(source, period) * (1 + shift/100)
```

Numeric expressions are also often used inside of Boolean expressions (see below).

Boolean expressions

A Boolean expression returns the logical value `True` or `False` as a result. As an input, it takes variables, parameters, function calls or other expressions (numeric or Boolean).

A simple Boolean expression is a *comparison* of two values or numeric expressions with the following relational operators:

=	True when first value equals second value
<	True when first value is smaller than second value (you can also use `Less` instead)
<=	True when first value is smaller than or equal to second value
>	True when first value is greater than second value (you can also use `Greater` instead)
>=	True when first value is greater than or equal to second value
<>	True when first value is different than second value

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You often compare the value of a variable or parameter with a fixed value – these kinds of expressions will return different results based on the current value of the variable and are often used as conditions for `If` statements or loops:

```
limitMove Greater 0
```

You can also use a numeric expression to calculate the value that you want to compare:

```
cNum[1] < period + 1
```

You can build even more complex Boolean expressions with *logical operators*. You typically have two or more conditions or Boolean variables that can each have a value of `True` or `False`. You then use the following logical operators to get a result:

`And` True when both conditions are true

`Or` True when one of the conditions or both of them are true

`Xor` True when either one of the conditions is true, but not both of them

`Not` Reverses the condition – if the condition was true, the result will be false and vice versa

You normally use this kind of expression for `If` conditions, where you want to make sure that several conditions are met at once before you proceed:

```
largest >= 0 And limitMove <> 0 And IsValid(source)
```

If you want to make sure that one of the condition is not met, you use the `Not` operator:

```
IsValid(source) And Not smallest <= 0
```

Another possibility to build a Boolean expression is the *check for crossovers*. You typically compare two numeric fields and check if they cross on a certain bar or not. The following syntax is available:

`Crosses` True when there is an intersection between the two values on this bar

`Crosses Over` True when there is an intersection, and the first value is now higher than the second value

(you can also use `Crosses Above` instead)

`Crosses Under` True when there is an intersection, and the first value is now lower than the second value

(you can also use `Crosses Below` instead)

You can also use this kind of expression when one of the sides is a constant value:

```
If a Crosses Over 0 Then ...
```

Note At least one of the sides of a `Crosses` expression has to be of the type `Numeric Field`, or must be a `Numeric` variable with history. History for a variable is only created when it is needed in the program. To force history for a `Numeric` variable, refer to it once with `var_name[0]` when you first assign a value. See also Accessing the History of Variables and Results on page 476.

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Conditional Expressions

A conditional expression returns a numeric or Boolean value as a result, depending on the values that you use inside the expression. Depending on the condition you use, one or the other value will be returned. Conditional expressions are rather complex, as you have to use a Boolean expression inside of it to formulate your condition:

```
Iff Condition Then Value1 Else Value2
```

The `Condition` is a Boolean expression that decides if `Value1` or `Value2` is returned by the expression. `Value1` and `Value2` can be either numeric or Boolean values, but they both have to be of the same type. Like any other expression, you can use the conditional expression for value assignment:

```
a = Iff b < c Then 1 Else 2;
```

The above line is identical to using the following `If` statement (for details about the syntax, see If Conditions on page 491):

```
If b < c Then
   a = 1
Else
   a = 2;
```

You can see that the `Iff` expression helps you save some code lines. The main difference between `If` and `Iff` is that the first one is a command statement (executes code), while the second one is an expression (just returns a value). Therefore, you can for example also use `Iff` expressions inside function calls, like any other expression:

```
Sum(Iff a < b Then Source.Close Else Source.Open, period)
```

To get the same results as above using an `If` statement, you would have to introduce an additional variable and add several lines of code.

Function Reference

You can use pre-defined (built-in) functions in your source code. These functions either calculate a result that you can then use in your own program or draw results on the screen as study objects. To use a function, you have to call it from within your own program: See Function Call on page 489 for more details on the correct syntax.

In this section, you will find descriptions of the functions that are included within the TeleTrader Language. Those are:

Drawing Functions	These functions draw and remove lines, areas and markers on the screen
Mathematical Functions	These functions represent some basic mathematical functions, like exponential or trigonometric functions
Date / Time Functions	These functions allow you to access the current system date and time or the date and time of the bar / data point that is currently active
System Functions	These functions perform some basic operations or calculations that are frequently needed regarding the time series (security) that the program is executed for
Text Functions	These functions can be used to manipulate text (strings).

For each function, the syntax is explained including the input values (parameters) that have to be passed to the function and the output that the function generates.

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General information about input types and automatic conversions

Whenever you pass an input value (parameter) to a function, you have to take care that the list of parameters you supply matches the type of parameters that are needed by the function – if the function needs a numeric input, you cannot call it up with a text input, for example. In some cases however, values are automatically converted to an appropriate type.

Function expects…	Remarks
`Numeric`	The input value must be a constant number, a variable or parameter of the type `Numeric`, `Numeric Field` or `Security`, the numeric result of a function call or a numeric expression. When using a parameter of the type `Numeric Field` (e.g. *`Source`*), it is automatically converted to the single numeric value *`Source`*`[0]`. You can of course also explicitly use historic values (e.g. *`Source`*`[1]`). When using a parameter of the type `Security` (e.g. *`Security`*), it is automatically converted to the single numeric value *`Security`*`[0].`*`Close`*. You can use historic values or other field elements (Open, High etc.) by stating them explicitly.
`Numeric Field`	The input value must be a parameter of the type `Numeric Field` or `Security`. When using a parameter of the type `Security` (e.g. *`Source`*), it is automatically converted to use the field element *`Source.Close`* except when stated otherwise. It is important to understand that the values of a parameter of the type `Numeric Field` are equal to the corresponding field elements of a `Security` parameter for the same base. For example, when you have defined a `Numeric Field` parameter named *`source1`* and a `Security` parameter named *`source2`*, you could both use *`source1`* or *`source2.Close`* as the input for a function. The only difference is that when using a `Security` parameter, you have to explicitly state in the source code which value (Close, Open etc.) you want to use, while when using a `Numeric Field` parameter, you can later change the value that is used in the **Insert Study** dialog, which is often the more flexible approach. In some situations, you can also use a `Numeric` variable in a place where `Numeric Field` is expected: If history is available for the variable, the variable will automatically be converted to the type `Numeric Field`. This also applies to numeric results of a function call and numeric expressions: For example, you can write *`Sum`*`(`*`Sum`*`(`*`source1, period1`*`),`*`period2`*`)` or *`Sum`*`(`*`source.Open - source.Close, period`*`).`
`Security`	The input value must be a parameter of the type `Security`.
`Boolean`	The input value must be the reserved word `True` or `False`, a variable or parameter of the type `Boolean`, the Boolean result of a function call or a Boolean expression.
`Text`	The input value must be a text enclosed in quotes, or a variable or parameter of the type `Text`.

Drawing Functions

With drawing functions, you can plot the results of your program on the screen (on a chart). All drawing functions need several inputs that define the name of the study object and where it is positioned on the chart. You can also use them to remove a specific study object from the chart.

Note The latest value of every study object that is plotted on the chart can also be shown in study columns in a price page.

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Drawing functions do not return any values and therefore are usually used on their own, that means the function call makes up a complete command statement.

DrawLine(Name, Level)	Draws a line study object.
DrawArea(Name, TopLevel, BottomLevel)	Draws an area study object.
DrawMarker(Name, PriceArrow, Orientation, MarkerText)	Draws a marker study object.
EraseLine(LineName)	Removes a line study object.
EraseArea(AreaName)	Removes an area study object.
EraseMarker(MarkerName)	Removes a marker study object.
SetLineProperty(Name, Property, Value)	Changes the appearance of a line study object.
SetAreaProperty(Name, Property, Value)	Changes the appearance of an area study object.
RGB(R, G, B)	Defines a custom color.
ResetLineProperty(Name, Property)	Resets a property of a line study object to its default value.
ResetAreaProperty(Name, Property)	Resets a property of an area study object to its default value.

DrawLine

This function draws a line study object.

A line study object is displayed on the chart as a single line. In price pages, lines are represented as one column per line, showing the value for the latest bar.

The appearance of the line can be changed with the function *SetLineProperty*. The default settings are defined on the **Appearance** tab of the **Study Editor** after saving the study. See also Line Settings on page 306.

```
DrawLine(Name, Level)
```

Parameters	Name	Text	Defines the name of the line study object. If the first letter of the name is a pound sign, for example "#max", the study object will be visible on the chart but will not be included in the Data Info box (transparent area in the corner of the chart).
	Level	Numeric	Defines the level at which the line study object is drawn.
Returns		Nothing	

Line study objects are usually used for studies that show on the chart as a line or histogram. The line can be positioned at a level that is calculated anew for each bar, like in the example below (line of the *Arms Index TRIN*):

```
DrawLine("TRIN", #movs(middle, period, shift));
```

You can see here that the input value for the parameter Level of the *DrawLine* function is the output of another function movs. When you use such constructions, make sure that the return type of the other function matches the input type that is needed. In this case, the movs function produces a numeric output and can therefore be used as the input for the Level parameter, which expects numeric data.

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Lines can also be positioned at fixed levels (example: zero line of the *Aroon Oscillator*):

```
DrawLine("#0", 0);
```

DrawArea

This function draws an area study object.

An area study object is displayed on the chart as a shaded, transparent area with two lines at the borders. In price pages, areas are represented by two columns, showing the *Upper* and *Lower* values for the latest bar.

The appearance of the area can be changed with the function *SetAreaProperty*. The default settings are defined on the **Appearance** tab of the **Study Editor** after saving the study. See also Area Settings on page 307.

```
DrawArea(Name, TopLevel, BottomLevel)
```

Parameters	Name	Text	Defines the name of the area study object. If the first letter of the name is a pound sign, for example "#max", the study object will be visible on the chart but will not be included in the Data Info box (transparent area in the corner of the chart).
	TopLevel	Numeric	Defines the level at which the top border line of the area study object is drawn.
	BottomLevel	Numeric	Defines the level at which the bottom border line of the area study object is drawn.
Returns		Nothing	

An area study object is used for studies such as the *Bollinger Bands* or the *RSI*, often in combination with a line study object:

```
DrawLine("RSI", rsi(Source, period, n));
DrawArea("#Upper", upperLevel, 100);
DrawArea("#Lower", lowerLevel, 0);
```

Note

In the Study Editor, you have the possibility to activate the **Percentage Mode** for your area: The area will then be displayed with percentage values instead of absolute values, e.g. with the top border at 75% and the bottom border at 25%. The border lines of areas in percentage mode are not influenced by changes in the vertical price scale, they will always cover the set percentage of the chart pane, regardless of the settings of the vertical price scale.

DrawMarker

This function draws a marker study object.

A marker study object is displayed on the chart as a combination of two arrows (up/down arrow and price arrow) and marker text. In price pages, markers are represented by three columns, showing the orientation of the up/down arrow, the marker text, and the price level of the price arrow.

The standard appearance of the marker can be defined on the **Appearance** tab of the **Study Editor** after saving the study. See also Marker Settings on page 308.

```
DrawMarker(Name, PriceArrow, Orientation, MarkerText)
```

Parameters	Name	Text	Defines the name of the marker study object. If the first letter of

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			the name is a pound sign, for example `"#max"`, the study object will be visible on the chart but will not be included in the Data Info box (transparent area in the corner of the chart).
	PriceArrow	Numeric	Defines the level at which the price arrow is displayed.
	Orientation	Boolean	Defines the orientation of the up/down arrow that is drawn. If the value is `True`, an up arrow will be drawn; if the value is `False`, a down arrow will be drawn.
	MarkerText	Text	Defines the marker text that is displayed below or above the up / down arrow.
Returns		Nothing	

Marker study objects are typically used for displaying the signals on a chart. For example, the candlestick pattern *Hammer* uses a marker study object:

```
DrawMarker("Hammer_TM", Source.Close, True, "Hammer");
```

This example code draws an upwards oriented arrow which shows up under the name "Hammer_TM" in Professional. The price arrow is usually positioned at a certain price level of the underlying symbol (here at the *Close*).

If you want to use both an upwards and a downwards oriented arrow within one study, the two marker objects must be referred to with the same name but use a different orientation:

```
DrawMarker("BuySellArrow", Source.Close, True, "Buy");
DrawMarker("BuySellArrow", Source.Close, False, "Sell");
```

EraseLine

This function removes a specific line study object from the chart. The line study object does not have to be drawn in the same program in that it is later removed – it must only be referred to with its correct name.

```
EraseLine(LineName)
```

Parameters	LineName	Text	Specifies the name of the line study object that should be removed.
Returns		Nothing	

To remove a line from the screen, it must first be drawn by the function. For example, if you draw a line called "TestLine", you can later remove it by using its name:

```
DrawLine("TestLine", TestLineLevel);

{... code to calculate MyRealLevel ... }

If IsValid(MyRealLevel) Then
Begin
   EraseLine("TestLine");
   DrawLine("RealLine", MyRealLevel);
End;
```

In this example, you first draw a "TestLine". Then you try to compute the real line level – if the result is valid, you erase the "TestLine" and instead draw a "RealLine".

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EraseArea

This function removes a specific area study object from the chart. The area study object does not have to be drawn in the same program in that it is later removed – it must only be referred to with its correct name.

```
EraseArea(AreaName)
```

Parameters	AreaName	Text	Specifies the name of the area study object that should be removed.
Returns		Nothing	

EraseMarker

This function removes a specific marker study object from the chart. The marker study object does not have to be drawn in the same program in that it is later removed – it must only be referred to with its correct name.

```
EraseMarker(MarkerName)
```

Parameters	MarkerName	Text	Specifies the name of the marker study object that should be removed.
Returns		Nothing	

For example, if you want to show only the most recent occurrence of a marker on the screen, you can erase all previously drawn markers:

```
{Remember when the last signal was triggered}
lastSignalOn = lastSignalOn[1];

{Add some conditions to trigger the signal under certain
conditions}
movs_fast[0] = #movs(Source, 9, 0);
movs_slow[0] = #movs(Source, 18, 0);

If movs_fast Crosses movs_slow Then
Begin
{When conditions are triggered, draw new marker and remember its
position, calculate distance to last marker and erase old marker}
   lastSignalOn = CurrentBar;
   DrawMarker[0]("MACross",Source[0], True, "Cross");
   distance = CurrentBar - lastSignalOn[1];
   EraseMarker[distance]("MACross");
End;
```

SetLineProperty

This function lets you change the properties of a specific line study object. It must be referred to with its correct name. The properties set by this function override the settings on the **Appearance** tab of the **Study Editor**. See also Line Settings on page 306.

```
SetLineProperty(Name, Property, Value)
```

Parameters	Name	Text	Specifies the name of the line study object that should be changed.

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	Property	Special	Specifies the line property that you want to change. Use one of the properties listed below:
			`Weight` or `Width`
			`Style`
			`Color`

	Value	Special	Defines the value that you want to set for the specified property. The following options are available: **Weight** Number between `1` and `4` **Style** `Solid`, `Dash`, `Dot`, `DashDot` **Color** `clrBlack`, `clrGray`, `clrSilver`, `clrWhite`, `clrNavy`, `clrBlue`, `clrTeal`, `clrAqua`, `clrOlive`, `clrGreen`, `clrLime`, `clrPurple`, `clrMagenta`, `clrRed`, `clrMaroon`, `clrYellow` or use the function *RGB* to define a custom color (see RGB function on page 508)
Returns		Nothing	

You can for example use this function to change the appearance of a line based on certain conditions. The following example shows a `"Volume"` line that changes its color to green when the current volume exceeds the average volume of the last 10 bars:

```
DrawLine("Volume", Source.Vol);

If Source.Vol > Average(Source.Vol, 10) Then
   Begin
          SetLineProperty("Volume", Color, clrGreen);
          SetLineProperty("Volume", Width, 3);
   End
Else
          SetLineProperty("Volume", Style, DashDot);
```

SetAreaProperty

This function lets you change the properties of a specific area study object. It must be referred to with its correct name. The properties set by this function override the settings on the **Appearance** tab of the **Study Editor**. See also Area Settings on page 307.

```
SetAreaProperty(Name, Property, Value)
```

Parameters	Name	Text	Specifies the name of the area study object that should be changed.

	Property	Special	Specifies the area property that you want to change. Use one of the properties listed below:
			`Weight` or `Width`
			`Style`
			`Line1Color`
			`Line2Color`
			`FillColor`
			`FillTransparency`

	Value	Special	Defines the value that you want to set for the specified property. The following options are available:

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	Weight	Number between `1` and `4`
	Style	`Solid`, `Dash`, `Dot`, `DashDot`
	Colors	`clrBlack`, `clrGray`, `clrSilver`, `clrWhite`, `clrNavy`, `clrBlue`, `clrTeal`, `clrAqua`, `clrOlive`, `clrGreen`, `clrLime`, `clrPurple`, `clrMagenta`, `clrRed`, `clrMaroon`, `clrYellow` or use the function *RGB* to define a custom color (see RGB function on page 508)
	Transparency	Number between `0` and `100`
Returns	`Nothing`	

The following example shows how to set the transparency of an area depending on the current bar position:

```
movs1 = #movs(Source, 50, 0);
movs2 = #movs(Source, 5, 0);
pos = CurrentBar/LastBar*100;

DrawArea("Area", movs2, movs1);
SetAreaProperty("Area", FillTransparency, 100 - pos );
```

RGB

This function lets you define a custom color that can be used in the functions *SetLineProperty* and *SetAreaProperty*.

```
RGB(R, G, B)
```

Parameters	R	`Numeric`	Number between `0` and `255` (Red component)
	G	`Numeric`	Number between `0` and `255` (Green component)
	B	`Numeric`	Number between `0` and `255` (Blue component)
Returns		`Numeric`	

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The following example shows the definition of a `HeatColor` with the *RGB* function. The `HeatColor` changes with the position of the current bar and can later be used to color lines or areas.

```
{ Define HeatColor }

bar = CurrentBar;

If bar <= 255 Then
   HeatColor = RGB(bar, 0, 0)
Else If bar <= 510 Then
   HeatColor = RGB(255, bar, 0)
Else If bar <= 765 Then
   HeatColor = RGB(255, 255, bar)
Else
   HeatColor = RGB(255, 255, 255);

{ Use in Line }

DrawLine("HeatLine", Source.Close);
SetLineProperty("HeatLine", Color, HeatColor);
```

ResetLineProperty

This function resets the specified line property of a line study object to its default value (that is, the value defined on the **Appearance** tab of the **Study Editor).**

```
ResetLineProperty(Name, Property)
```

Parameters	Name	Text	Specifies the name of the line study object that should be reset to default.
	Property	Special	Specifies the line property that you want to reset to default. Use one of the properties listed below: Weight or Width Style Color
Returns		Nothing	

ResetAreaProperty

This function resets the specified area property of an area study object to its default value (that is, the value defined on the **Appearance** tab of the **Study Editor).**

```
ResetAreaProperty(Name, Property)
```

Parameters	Name	Text	Specifies the name of the area study object that should be reset to default.
	Property	Special	Specifies the area property that you want to reset to default. Use one of the properties listed below: Weight or Width Style Line1Color Line2Color

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	FillColor FillTransparency
Returns	Nothing

Mathematical Functions

Mathematical functions give you access to some basic mathematical functions, like exponential or trigonometric functions. They take the input values and return a numeric value.

sin(x)	Returns the sine for a given numeric value.
cos(x)	Returns the cosine for a given numeric value.
tg(x)	Returns the tangent for a given numeric value.
ctg(x)	Returns the cotangent for a given numeric value.
asin(x)	Returns the arcsine for a given numeric value.
acos(x)	Returns the arccosine for a given numeric value.
atan(x)	Returns the arctangent for a given numeric value.
sqrt(x)	Returns the square root for a given numeric value.
exp(x)	Returns the result of the exponential function for a given numeric value.
log(x)	Returns the result of the logarithmic function for a given numeric value.
ln(x)	Returns the natural logarithm for a given numeric value.
Pi	Returns the value for the mathematical constant pi (π = 3.14159…)
EulersNumber	Returns the value for Euler's number (e = 2.71…)
abs(x)	Returns the absolute value for a given numeric value.
trunc(x)	Returns the truncated value for a given numeric value.
round(x)	Returns the rounded value for a given numeric value.
power(Base,Exponent)	Returns the result of the power function for a given base and exponent.
max(First,Second)	Returns the higher value of two given numeric values.
min(First,Second)	Returns the lower value of two given numeric values.

sin

This function calculates the sine for a given numeric value.

```
sin(x)
```

Parameters	x	Numeric	Specifies the value that the sine is calculated for.
Returns		Numeric	

cos

This function calculates the cosine for a given numeric value.

```
cos(x)
```

Parameters	x	Numeric	Specifies the value that the cosine is calculated for.
Returns		Numeric	

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tg

This function calculates the tangent for a given numeric value.

```
tg(x)
```

Parameters	x	Numeric	Specifies the value that the tangent is calculated for.
Returns		Numeric	

ctg

This function calculates the cotangent for a given numeric value.

```
ctg(x)
```

Parameters	x	Numeric	Specifies the value that the cotangent is calculated for.
Returns		Numeric	

asin

This function calculates the arcsine for a given numeric value.

```
asin(x)
```

Parameters	x	Numeric	Specifies the value that the arcsine is calculated for.
Returns		Numeric	

acos

This function calculates the arccosine for a given numeric value.

```
acos(x)
```

Parameters	x	Numeric	Specifies the value that the arccosine is calculated for.
Returns		Numeric	

atan

This function calculates the arctangent for a given numeric value.

```
atan(x)
```

Parameters	x	Numeric	Specifies the value that the arctangent is calculated for.
Returns		Numeric	

sqrt

This function calculates the square root of a given numeric value.

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```
sqrt(x)
```

Parameters	x	Numeric	Specifies the value that the square root is calculated for.
Returns		Numeric	

exp

This function calculates the result of the exponential function for a given numeric value.

```
exp(x)
```

Parameters	x	Numeric	Specifies the value that the exponential function is calculated for.
Returns		Numeric	

log

This function calculates the result of the logarithmic function for a given numeric value.

```
log(x)
```

Parameters	x	Numeric	Specifies the value that the logarithmic function is calculated for.
Returns		Numeric	

ln

This function calculates the natural logarithm for a given numeric value.

```
ln(x)
```

Parameters	x	Numeric	Specifies the value that the natural logarithm is calculated for.
Returns		Numeric	

Pi

This function returns the value for the mathematical constant pi (π = 3.14159…). This function is called without brackets, since it does not require any input.

```
Pi
```

Parameters	None
Returns	Numeric

EulersNumber

This function returns the value for Euler's number (e = 2.71…). This function is called without brackets, since it does not require any input.

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```
EulersNumber
```

Parameters	None
Returns	Numeric

abs

This function calculates the absolute value for a given numeric value.

```
abs(x)
```

Parameters	x	Numeric	Specifies the value that the absolute value is calculated for.
Returns		Numeric	

trunc

This function calculates the truncated value for a given numeric value (it removes the trailing decimal portion of the number). It returns an integer.

```
trunc(x)
```

Parameters	x	Numeric	Specifies the value that the truncated value is calculated for.
Returns		Numeric	

round

This function calculates the rounded value for a given numeric value. It returns an integer.

```
round(x)
```

Parameters	x	Numeric	Specifies the value that the rounded value is calculated for.
Returns		Numeric	

power

This function calculates the result of the power function for a given base and exponent.

```
power(Base, Exponent)
```

Parameters	Base	Numeric	Specifies the base of the power function.
	Exponent	Numeric	Specifies the exponent of the power function.
Returns		Numeric	

max

This function returns the higher value of two given numeric values.

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```
max(First, Second)
```

Parameters	First	Numeric	Specifies the first value.
	Second	Numeric	Specifies the second value.
Returns		Numeric	

min

This function returns the lower value of two given numeric values.

```
min(First, Second)
```

Parameters	First	Numeric	Specifies the first value.
	Second	Numeric	Specifies the second value.
Returns		Numeric	

Date / Time Functions

Date / time functions allow you to access the current system date and time, or the date and time of the bar / data point that is currently active. The current bar is the one that the program is executed for at the moment (see also Calculate Values for One Bar - Get Results for All Bars on page 473).

All date / time functions return a numeric value. They do not need any input – therefore, you call them with without any brackets.

Day	Returns the current day of the month.
Month	Returns the current month.
Year	Returns the current year.
DayOfWeek	Returns the current day of the week as a number.
Minute	Returns the current minute.
Second	Returns the current second.
YearSecond	Returns the number of seconds which have elapsed since the beginning of the current year.
UniqueTime	Returns the current date and time.
BarDay	Returns the day of the month of the current bar.
BarMonth	Returns the month of the current bar.
BarYear	Returns the year of the current bar.
BarDayOfWeek	Returns the day of the week of the current bar as a number.
BarHour	Returns the hour of the current bar.
BarMinute	Returns the minute of the current bar.
BarSecond	Returns the second of the current bar.
BarYearSecond	Returns the number of seconds which have elapsed since the beginning of the current year until the current bar.
BarUniqueTime	Returns date and time of the current bar.

Day

This function returns the current day of the month.

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```
Day
```

Parameters	None
Returns	Numeric

Month

This function returns the current month.

```
Month
```

Parameters	None
Returns	Numeric

Year

This function returns the current year in the format *YYYY*.

```
Year
```

Parameters	None
Returns	Numeric

DayOfWeek

This function returns the current day of the week as a number (Sunday = 0).

```
DayOfWeek
```

Parameters	None
Returns	Numeric

Minute

This function returns the current minute.

```
Minute
```

Parameters	None
Returns	Numeric

Second

This function returns the current second.

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```
Second
```

Parameters	None
Returns	Numeric

YearSecond

This function returns the number of seconds which have elapsed since the beginning of the current year.

```
YearSecond
```

Parameters	None
Returns	Numeric

UniqueTime

This function returns the current system date and time.

```
UniqueTime
```

Parameters	None
Returns	Numeric

BarDay

This function returns the day of the month of the current bar.

```
BarDay
```

Parameters	None
Returns	Numeric

BarMonth

This function returns the month of the current bar.

```
BarMonth
```

Parameters	None
Returns	Numeric

BarYear

This function returns the year of the current bar in the format *YYYY*.

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```
BarYear
```

Parameters	None
Returns	Numeric

BarDayOfWeek

This function returns the day of the week of the current bar as a number (Sunday = 0).

```
BarDayOfWeek
```

Parameters	None
Returns	Numeric

BarHour

This function returns the hour of the current bar.

```
BarHour
```

Parameters	None
Returns	Numeric

BarMinute

This function returns the minute of the current bar.

```
BarMinute
```

Parameters	None
Returns	Numeric

BarSecond

This function returns the second of the current bar.

```
BarSecond
```

Parameters	None
Returns	Numeric

BarYearSecond

This function returns the number of seconds which have elapsed since the beginning of the current year until the current bar.

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```
BarYearSecond
```

Parameters	None
Returns	Numeric

BarUniqueTime

This function returns date and time of the current bar.

```
BarUniqueTime
```

Parameters	None
Returns	Numeric

System Functions

System functions perform some basic operations or calculations that are frequently needed.

Some functions (*CurrentBar*, *LastBar*, *TimePeriod*) return information about the underlying time series (security) and are called without brackets, since they do not require any input.

CurrentBar	Returns the index number of the current bar.
LastBar	Returns the index number of the last available bar.
TimePeriod	Returns the current time compression of the time series in minutes.
IsValid(CheckValue)	Returns True if the input value passed to it is valid.
Invalidate(VariableName)	Invalidates the value of a variable.
Sum(SumValues, Range)	Returns the sum of the given values for the specified period.
Sum_2(SumValues, Range)	Returns the sum of the squared values for the specified period.
Sum_DownDiff(SumValues, Range)	Returns the sum of the downwards price differences between a bar and its previous bar for the specified period.
Sum_UpDiff(SumValues, Range)	Returns the sum of the upwards price differences between a bar and its previous bar for the specified period.
Sum_xy(Source1, Source2, Range)	Returns the scalar product between two securities for the specified period.
SumAbsDistance(SumValues, NumValue, Range)	Returns the sum of the absolute distances between a bar and a certain numeric value for the specified period.
Average(Values, Range)	Returns the average value of the given values for the specified period
StdDev(Source, Range)	Returns the standard deviation for the given values over the specified period.
StdDev_biased(Source, Range)	Returns the biased standard deviation for the given values over the specified period.
LinearRegression(Source, Range, Target)	Returns the linear regression for the given values over the specified period.
Covariance(Source1, Source2, Range)	Returns the covariance between two securities over the specified period.
Covariance_biased(Source1,	Returns the biased covariance between two securities over the

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Source2, Range)	specified period.
RSquared(Source1, Source2, Range)	Returns R squared for the given securities over the specified period.
Correlation(Source1, Source2, Range)	Returns the correlation between two securities over the specified period.
Beta(Source1, Source2, Range)	Returns the beta for the given securities over the specified period.
Highest(Source, Range)	Returns the highest value of a given set of values which is defined by a specific period.
HighestIndex(Source, Range)	Returns the index number of the bar that has the highest value of a given set of values, which is defined by a specific period.
Lowest(Source, Range)	Returns the lowest value of a given set of values which is defined by a specific period.
LowestIndex(Source, Range)	Returns the index number of the bar that has the lowest value of a given set of values, which is defined by a specific period.
CountHigher2(Source1, Source2, Range)	Returns the number of bars where the value of the first security is higher than the value of the second security inside the specified period.
CountLower2(Source1, Source2, Range)	Returns the number of bars where the value of the first security is lower than the value of the second security inside the specified period.
CountTrue(BoolValues, Range)	Returns the number of true values inside the specified period.
CountFalse(BoolValues, Range)	Returns the number of false values inside the specified period.

CurrentBar

This function returns the index number of the current bar. For the first bar, *CurrentBar* returns the value 1.

```
CurrentBar
```

Parameters	None
Returns	Numeric

This function is often used to control the execution of calculations with If statements. For example, some calculations might not be reasonable before a certain bar number is reached.

```
If CurrentBar = 4 Or CurrentBar = 5 Then
   cycle = (price - 2 * price[1] + price[2]) / 4
Else
...
```

LastBar

This function returns the index number of the last bar that is available on the chart (in the time series).

```
LastBar
```

Parameters	None
Returns	Numeric

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You can use this function for example to determine whether the last bar has been reached already in a calculation:

```
If LastBar = CurrentBar Then
...
```

TimePeriod

This function returns the current time compression of the time series in minutes. You can use it to find out which data compression is currently used in the chart that the study is applied to.

```
TimePeriod
```

Parameters	None
Returns	Numeric

IsValid

This function returns `True` if the input value passed to it is valid, and `False` if the input value is not valid.

```
IsValid(CheckValue)
```

Parameters	CheckValue	Numeric	Specifies the value that should be checked for validity.
Returns		Boolean	

This function is most commonly used to check if certain needed values are available before carrying out any calculations with them:

```
If IsValid(Source.High) And IsValid(Source.Low) Then
   resultDiff = Source.High - Source.Low;
```

Invalidate

This function invalidates the value of a numeric variable. Subsequent checks with *IsValid* will return `False` for this variable.

```
Invalidate(VariableName)
```

Parameters	VariableName	Name of the variable that should invalidated. The variable must be of the type Numeric.
Returns		Nothing

Sum

This function sums up the given values (prices of a security) for a specific period (range).

```
Sum(SumValues, Range)
```

Parameters	SumValues	Numeric Field	Specifies the values that should be summed up, usually the

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			prices of a security.
	Range	Numeric	Defines the number of values that should be summed up (period, range).
Returns		Numeric	

The function *Sum* is used in many studies, for example to calculate the middle band of the *Bollinger Bands*:

```
middleBand = Sum(source, period) / period;
```

If for example the parameter *period* is set to 21 and *source* is set to the *Close* prices of a security, the *Sum* function will sum up the *Close* prices of the last 21 bars.

Sum_2

This function squares the given values (prices of a security) and then sums them up for a specific period (range).

```
Sum_2(SumValues, Range)
```

Parameters	SumValues	Numeric Field	Specifies the values that should be squared and then summed up, usually the prices of a security.
	Range	Numeric	Defines the number of values that should be summed up (period, range).
Returns		Numeric	

Sum_DownDiff

This function sums up the downwards price differences between a bar and its previous bar for a specific period (range). When you use for example the *Close* prices of a security as an input, this function will only sum up the differences for those bars where the *Close* price of the previous bar was higher than the *Close* price of the current bar ("down days").

```
Sum_DownDiff(SumValues, Range)
```

Parameters	SumValues	Numeric Field	Specifies the values that should be summed up, usually the prices of a security.
	Range	Numeric	Defines the number of values that should be summed up (period, range). The function will only use those values out of this range where the price has moved down from the previous bar.
Returns		Numeric	

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This function is for example used in the *Chande Momentum Oscillator*, that calculates the difference between the sum of all recent gains and the sum of all recent losses and then divides the result by the sum of all price movement over the period.

```
SumUp = Sum_UpDiff(Source, period);
SumDown = Sum_DownDiff(Source, period);
rslt = 100 * (SumUp - SumDown) / (SumUp + SumDown);
```

Sum_UpDiff

This function sums up the upwards price differences between a bar and its previous bar for a specific period (range). When you use for example the *Close* prices of a security as an input, this function will only sum up the differences for those bars where the *Close* price of the previous bar was lower than the *Close* price of the current bar ("up days").

```
Sum_UpDiff(SumValues, Range)
```

Parameters	SumValues	Numeric Field	Specifies the values that should be summed up, usually the prices of a security.
	Range	Numeric	Defines the number of values that should be summed up (period, range). The function will only use those values out of this range where the price has moved up from the previous bar.
Returns		Numeric	

Sum_xy

This function calculates the scalar product between two securities for a specific period (range). That means that for each bar, it multiplies the values of the two securities, and then sums up the results for the whole range.

```
Sum_xy(Source1, Source2, Range)
```

Parameters	Source1	Numeric Field	Specifies the values of the first security.
	Source2	Numeric Field	Specifies the values of the second security.
	Range	Numeric	Defines the number of values that should be multiplied and then summed up (period, range).
Returns		Numeric	

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This function could for example be used in the calculations for the *Beta Factor*, that shows the development of a stock within the general market growth direction, represented by its index:

```
If IsValid(Source1) Then
   rend = #roc(Source1, 2);
If IsValid(Source2) Then
   mktRend = #roc(Source2, 2);

...

help_1 = Sum_xy(rend, mktRend, period);
```

SumAbsDistance

This function sums up the absolute distance between the given values (prices of a security) and a certain numeric value for a specific period (range).

```
SumAbsDistance(SumValues, NumValue, Range)
```

Parameters	SumValues	Numeric Field	Specifies the values whose absolute distance to a certain value should be summed up, usually the prices of a security.
	NumValue	Numeric	Specifies a certain numeric value to measure the absolute distance to.
	Range	Numeric	Defines the number of values that should be summed up (period, range).
Returns		Numeric	

This function is for example used in the calculations for the *Commodity Channel Index*. X is defined here as the "typical price" of a security, avgX is the average of the typical price over the last *period* bars. avgMD calculates the mean deviation for the CCI using the function *SumAbsDistance*.

```
avgMD = SumAbsDistance(X, avgX, period) / period;
```

Average

This function returns the average value of all given values (for example prices of a security) for a specific period (range).

```
Average(Values, Range)
```

Parameters	Values	Numeric Field	Specifies the values for which the average should be calculated, usually the prices of a security.
	Range	Numeric	Defines the number of values that should be used for the average (period, range).
Returns		Numeric	

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This function is for example used to calculate the *Moving Average Simple*:

```
Result = Average(Source, period) * (1 + shift / 100);
```

StdDev

This function calculates the standard deviation for the given values (prices of a security) over a specific period (range).

```
StdDev(Source, Range)
```

Parameters	Source	Numeric Field	Specifies the values for which the standard deviation should be calculated, usually the prices of a security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

In statistics, the standard deviation is a means of measuring the variability of a data set. It is for example used for calculating the *Bollinger Bands*. While the middle band ("Mid") is a standard moving average, the outer bands ("Boll") are calculated based on the standard deviation over the same period of time:

```
middleBand = Sum(Source, period) / period;
dev = StdDev(Source, period);

DrawArea("Boll", middleBand + deviation1 * dev, middleBand -
deviation2 * dev);
DrawLine("Mid", middleBand);
```

If the standard deviation is low, the data points of the examined period tend to be close to the mean value, which means that the outer bands are close to the middle band. If the standard deviation is high, the data points tend to be further away from the mean value (average), which means that the outer bands are at a greater distance to the middle band.

StdDev_biased

This function calculates the biased standard deviation for the given values (prices of a security) over a specific period (range). The biased standard deviation should be used if you already know the target value around which fluctuations occur.

```
StdDev_biased(Source, Range)
```

Parameters	Source	Numeric Field	Specifies the values for which the biased standard deviation should be calculated, usually the prices of a security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

LinearRegression

This function calculates the linear regression for the given values over a specific period (range).

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```
LinearRegression(Source, Range, Target)
```

Parameters	Source	Numeric Field	Specifies the values for which the linear regression should be calculated.
	Range	Numeric	Defines the number of values that should be used (period, range).
	Target	Numeric	Specifies the (future) target bar for the linear regression line. For example, use 1 as an input to address the value of the next bar to the right of the resulting line and so on.
Returns		Numeric	

Linear regression is a mathematical tool to represent a set of input data (here: the last *period* bars of the *Source* parameter) as a line by using the least squares approach. This means that the squared distances from the linear regression line to all points of the input data are minimal. With the additional parameter Target, you can choose if you want to get the value for the current bar or for a future bar of the resulting line. It is for example used in the functions for the candlestick signals *Hammer* or *Hanging Man*:

```
lin_reg_value = LinearRegression(Source.Close, period, 0);
```

Covariance

This function calculates the covariance between two securities over a specific period (range).

```
Covariance(Source1, Source2, Range)
```

Parameters	Source1	Numeric Field	Specifies the values of the first security.
	Source2	Numeric Field	Specifies the values of the second security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

Covariance is a statistical tool to measure how much two securities change together – positive covariance means that the securities move in tandem, negative covariance means that the two securities move inverted to each other (inverse correlation). A value near zero means that there is no covariance, that means that the two given values are probably not dependent of each other.

Covariance_biased

This function calculates the biased covariance between two securities over a specific period (range). The biased covariance should be used if you already know the target value around which fluctuations occur.

```
Covariance_biased(Source1, Source2, Range)
```

Parameters	Source1	Numeric Field	Specifies the values of the first security.
	Source2	Numeric Field	Specifies the values of the second security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

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Rsquared

This function calculates R squared for two given securities over a specific period (range).

```
RSquared(Source1, Source2, Range)
```

Parameters	Source1	Numeric Field	Specifies the values of the first security.
	Source2	Numeric Field	Specifies the values of the second security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

R squared is a statistical tool, also called coefficient of determination. It represents the percentage of a fund or security's movement that can be explained by movements in a benchmark index. The values returned range from 0 to 100, with 100 meaning that all movements of the first source parameter can be fully explained by the movements of the second source parameter.

Correlation

This function calculates the correlation between two securities over a specific period (range).

```
Correlation(Source1, Source2, Range)
```

Parameters	Source1	Numeric Field	Specifies the values of the first security.
	Source2	Numeric Field	Specifies the values of the second security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

Correlation is a statistical tool to measure the tendency of two securities to move into the same direction. It returns a value between +1 and -1, with +1 meaning that the two securities tend to move together and -1 meaning that the two securities tend to move in opposite directions. A correlation value near zero indicates that there is probably no connection between the movements of the two securities.

Beta

This function calculates the beta for the given securities / indices over a specific period (range).

```
Beta(Source1, Source2, Range)
```

Parameters	Source1	Numeric Field	Specifies the values of the first security.
	Source2	Numeric Field	Specifies the values of the second security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

The beta describes the relation between a stock (first source parameter) and the financial market (second source parameter). A positive beta means that the movements of the stock follow the market movements, a negative beta shows an inverse correlation and a beta close to zero means that there is no connection between the movements of the two source parameters.

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Highest

This function returns the highest value of a given set of values (prices of a security), which is defined by a specific period (range).

```
Highest(Source, Range)
```

Parameters	Source	Numeric Field	Specifies the values for which the highest value should be determined, usually the prices of a security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

This function is for example used in the study *OHLC of Last x Periods* to display the highest value of the specified range (for example, the highest *High* price of the last 21 bars):

```
DrawLine("Highest", Highest(Source, period));
```

HighestIndex

This function returns the index number of the bar that has the highest value of a given set of values, which is defined by a specific period (range). The returned index number is relative to the chosen range – for example, when you use a range of 10, the current bar is bar 100, and the bar with the highest value is bar 95, the index number returned by *HighestIndex* will be 5 (the fifth bar to the left of the current bar).

```
HighestIndex(Source, Range)
```

Parameters	Source	Numeric Field	Specifies the values for which the index number of the highest value should be determined, usually the prices of a security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

This function can be used to find the bar that has the highest value of a given set of bars. The *Aroon* indicator for example looks for the bar with the highest value in a given time period. To find out when the highest value in this period was reached, the *HighestIndex* function is used:

```
aroon_up = (period - HighestIndex(Source.High, period)) / period
* 100;
```

Lowest

This function returns the lowest value of a given set of values (prices of a security), which is defined by a specific period (range).

```
Lowest(Source, Range)
```

Parameters	Source	Numeric Field	Specifies the values for which the lowest value should be determined, usually the prices of a security.

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	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

This function is for example used in the study *Donchian Channel* to find out the lowest low of the specified range (for example, the lowest *Low* price of the last 21 bars, offset by one bar into the past):

```
lowestL = Lowest(Source.Low[1], periodLow));
```

LowestIndex

This function returns the index number of the bar that has the lowest value of a given set of values, which is defined by a specific period (range). The returned index number is relative to the chosen range – for example, when you use a range of 10, the current bar is bar 100, and the bar with the lowest value is bar 95, the index number returned by *HighestIndex* will be 5 (the fifth bar to the left of the current bar).

```
LowestIndex(Source, Range)
```

Parameters	Source	Numeric Field	Specifies the values for which the index number of the lowest value should be determined, usually the prices of a security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

CountHigher2

This function returns the number of bars where the value of the first security is higher than the value of the second security inside the specified period.

```
CountHigher2(Source1, Source2, Range)
```

Parameters	Source1	Numeric Field	Specifies the values of the first security.
	Source2	Numeric Field	Specifies the values of the second security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

This function is for example used in the signal *Count Criteria*. It is used to compare the *Close* values of a security with the *High* values of the same security from the day before (rising values). It returns the number of times that today's *Close* was higher than yesterday's *High* inside the specified period (for example during the last 21 days).

```
CountHigher2(Source.Close, Source.High[1], Period)
```

CountLower2

This function returns the number of bars where the value of the first security is lower than the value of the second security inside the specified period.

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```
CountLower2(Source1, Source2, Range)
```

Parameters	Source1	Numeric Field	Specifies the values of the first security.
	Source2	Numeric Field	Specifies the values of the second security.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

CountTrue

This function returns the number of true values inside the specified period.

```
CountTrue(BoolValues,Range)
```

Parameters	BoolValues	Boolean	Specifies the Boolean values that should be counted.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

You can for example use this function in signals where you want to make sure that a certain condition is true for several bars before you continue with other calculations. In the example below, you get some Boolean output from a function for a number of bars and then check with *CountTrue* if this output is true for three bars in a row before drawing a marker on the last bar.

```
bool_output = funcBoolCalc(Source, Period);
If CountTrue(bool_output, 3) = 3 Then
   DrawMarker("MarkThisBar", Source.High, False, "My Signal");
```

CountFalse

This function returns the number of false values inside the specified period.

```
CountFalse(BoolValues,Range)
```

Parameters	BoolValues	Boolean	Specifies the Boolean values that should be counted.
	Range	Numeric	Defines the number of values that should be used (period, range).
Returns		Numeric	

Text Functions

With text functions, you can manipulate text (strings) and parameters and variables of the type `Text`.

Length(Str)	Returns the length of a text variable or parameter.
Find(StrSource, StrFind)	Returns the position of specific content inside a text variable or parameter.
InsertStr(StrSource, Posistion, StrContent)	Inserts additional text into a text variable or parameter.
DelStr(StrSource, PosFrom, Length)	Removes characters from a text variable or parameter.

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SubStr(StrSource, PosFrom, Length)	Returns a specific part of a text variable or parameter.

Length

This function returns the length (number of characters) of a text variable or parameter.

```
Length(Str)
```

Parameters	Str	Text	Specifies the text (string) for which the length should be determined.
Returns		Numeric	

Find

This function searches the source text for some specific content and returns its position inside the text variable or parameter.

```
Find(StrSource, StrFind)
```

Parameters	StrSource	Text	Specifies the source text (string) that should be searched.
	StrFind	Text	Specifies the text (string) that should be found.
Returns		Numeric	

InsertStr

This function inserts additional text at a specific location into a text variable or parameter and returns the extended text.

```
InsertStr(StrSource, Posistion, StrContent)
```

Parameters	StrSource	Text	Specifies the original text (string).
	Position	Numeric	Specifies the position at which the additional text should be inserted.
	StrContent	Text	Specifies the additional text (string) that should be inserted into the original text.
Returns		Text	

DelStr

This function removes characters from a text variable or parameter at a specific location and returns the shortened text.

```
DelStr(StrSource, PosFrom, Length)
```

Parameters	StrSource	Text	Specifies the original text (string).
	PosFrom	Numeric	Specifies the position at which the removing of text should start.
	Length	Numeric	Defines the length of the section that should be removed (number of characters).

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Returns	Text

SubStr

This function returns a specific part of a text variable or parameter.

```
SubStr(StrSource, PosFrom, Length)
```

Parameters	StrSource	Text	Specifies the original text (string).
	PosFrom	Numeric	Specifies the position at which the newly created text should start.
	Length	Numeric	Defines the length of the section that should be included in the new text (number of characters).
Returns		Text	

Error Messages

When you check your code for compliance with the syntax of the TeleTrader Language, the following error messages can be displayed:

Syntax error	You did not use the correct syntax of the TeleTrader Language. This message is often followed by additional explanatory text.
Array index error	You are trying to access the history of a parameter or variable, but you are not using a numeric value inside the square brackets to do this.
Conditional expression not Boolean	A command statement you are using needs a Boolean expression (for example If statements, While and Repeat loops), but the expression that you provide is not Boolean (a Boolean expression should have the logical value True or False as a result).
Function has no execution block	You have created a function without an execution block (Begin … End.). Your function will do nothing.
Function has no return value and no output. Function does nothing	You have created a function that does neither return a value nor draw something on the screen.
Function redefinition	You are trying to use a function name that already exists. Change the name of your function.
Function which has no source parameter which provides time line cannot have Draw functions	You are using a drawing function inside your program. However, you have not defined a parameter of the type Numeric Field or Security that lets you apply your program to a security. In that case, you can only perform mathematical operations with your program. If you want to draw on the screen, declare a *Source* parameter for your security.
Identifier cannot be used as function	You are using a variable or parameter like a function call (for example *Source*(*shift*) or dev(*period*, *deviation*) – this is not possible.
Identifier is not L-value	You are using a parameter, constant or function call on the left side of an equation sign that is not allowed to be used there.
Loop end value is not numeric	You are using a non-numeric stop value in a For loop.
Loop end value is unreachable	You are using a stop value that is less than the start value in a For loop, and thus the end of the loop cannot be reached. (When the For loop is counting down using Downto: You are using a stop value that is greater than the start value.)

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Loop start value is not numeric	You are using a non-numeric start value in a `For` loop.
Loop variable is not numeric	You are using a variable inside a loop that is supposed to be numeric, but has not been declared as such. For example, the counter variable of a `For` loop needs to be a numeric value.
NoDraw (or #) can only be placed in front of functions	You are using `#` in front of a variable or parameter. This feature can only be used for functions, where it will suppress the drawing of any elements and only return the calculated results of a function.
Record field error	You are trying to access an element of a security (for example its *Close* or *Open* value) that does not exist. Check for typos, or check if the parameter or variable you are using is correctly declared as `Security`.
This function cannot be array type	Some functions like *CurrentBar* cannot be used on past or future bars; using them in the form of *CurrentBar*`[1]` or similar will produce this error. You can use the expression *CurrentBar* `- 1` instead.
Type mismatch	You are using a variable or parameter of the wrong type in your program. Check if you are for example trying to assign a text value to a variable that has been declared as numeric, or trying to pass a numeric value to a function that expects a Boolean parameter, etc.
Unknown identifier	You are using a variable or parameter that the computer does not know. Look for a typo or check if you have correctly declared all variables and parameters that you are using.
Value is not array type	You are trying to access the history of a value that has no history. For example, if you define a numeric parameter *period* that has been assigned a simple numeric value like `21`, you cannot access its past value with *period*`[1]` because it has no history.
Value is not basic type	You are trying to use a basic value that has not been declared correctly.
Value is not record type	You are trying to access an element of a security (for example its *Close* or *Open* value), but the parameter or variable you are using is not of the type `Security`. Check if you have for example declared your parameter *Source* as `Numeric Field` instead of as `Security`.
Wrong number of parameters	You are making a function call, but using the wrong number of parameters in the function call (inside the round brackets): Check the Function Reference on page 501 for the correct number of parameters.

Syntax Coloring

Throughout this manual and when editing source code in TeleTrader Professional, different colors and styles are used to make it easier for you to differentiate between the parts of the TeleTrader Language.

Reserved Words `Sample`	Reserved words have a special meaning in the language. You are not allowed to use them as a name for your own variables, parameters or functions. See also Naming Conventions on page 486. For example: `If`, `Begin`, `Numeric`…
Parameter or Symbol Names *Sample*	Parameters are input values that will be needed throughout the program. They are normally passed to a study on the **Parameters** tab of the **Insert Study** dialog. See also Parameters on page 480. For example: *Source*.*Close*, *period*, *commission*… Symbols are similar to base parameters and hold time series data. They have to be mapped to a specific time series in the source code. See also Symbols on page 484. For example: *advance*, *decline*, *EURUSD*…

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Variable Names `Sample`	Variables are used to temporarily store information that will be needed again later. They have to be assigned an initial value in the source code. See also Variables on page 482. For example: `diffHigh`, `adx_value`, `iCount`,...
Function Names: Built-in functions *`Sample`*	Built-in functions can be used as helper programs in your own code. You can use them, but you cannot see their source code, as this is only defined internally. See also Function Call on page 489 and Function Reference on page 501. For example: *`Sum`*, *`DrawLine`*, *`IsValid`*...
Function Names: Visible functions `Sample`	Visible functions can be called from your own code, and you can see and adapt their source code in TeleTrader Professional. Every study is defined as a function; some additional functions are available on the **Functions** tab of the **Study Editor**. See also Function Call on page 489. For example: `movs`, `funcDmi_diff`, `MyStudy`...
Text `Sample`	Text inputs must be enclosed in quotes. They can be used to assign values to a variable or parameter of the type `Text`, or can be passed as inputs in a function call (drawing functions). For example: `"HangingMan_TM"`, `"Buy Signal"`...
Numbers or Enumerators `Sample`	Numeric inputs can be used in value assignments and expressions or as an input to function calls. For example: `3.1415926535`, `0`, `60`... Enumerators are the possible values of parameters or variables with a custom enumeration type. For example: `Red`, `Twice`, `Xetra`...
Comments `Sample`	Comments in the code must be enclosed in braces. For example: `{ Get bar time }`

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Customer Support

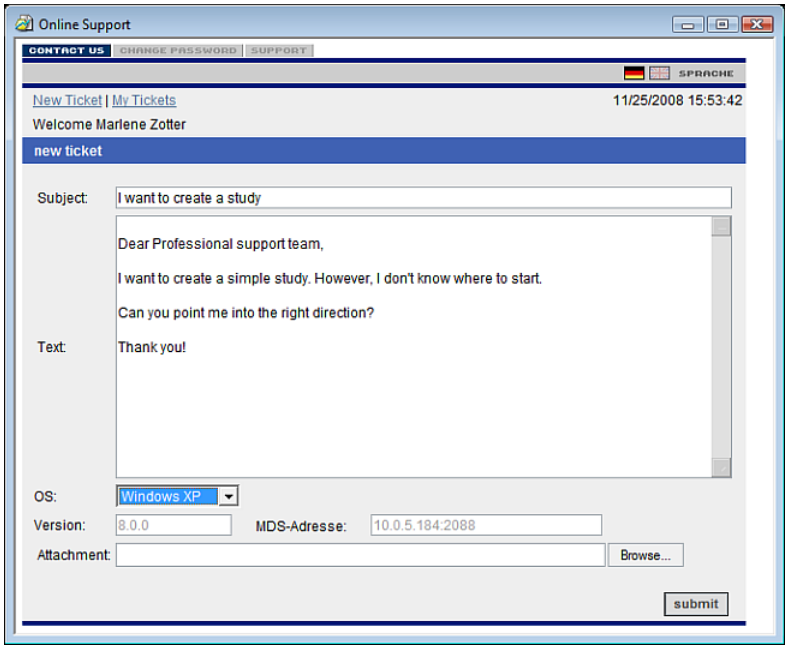
If you have further questions about TeleTrader Professional, you can contact our support team. The easiest way to do this is by using the **Online Support** which is integrated in the program. You can of course also contact us by e-mail or regular mail.

Online support

You can submit a query (ticket) to the support team and view the status of your queries online.

To submit a query to customer support

- On the **Help** menu, click **Online Support** and log in with your Professional user name and password.
- In the form, enter your request. Please try to be as specific as possible, and also mention what steps you have already tried to resolve the problem.



- You can also attach a file (for example a sample workspace) to your message.
- Click **Submit** to send your query to customer support.
- The support team will answer your request as soon as possible. All answers will be sent to the e-mail address that you provided during the registration process.

To view the status of your queries

- On the **Help** menu, click **Online Support** and log in with your Professional user name and password.
- Click on **My Tickets** to view the status of your submitted queries.

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